COMING FEATURES

(dates are tentative)

GENERAL

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Designing Narrow Fabrics. May 14
Yarn Diameter and Fabric Construction ..... May 28

COTTON

Marquisette Weaves ..... May 21
Practical Organizations... May 28
Simplified Spinning-Room Reports ..... May 28

WOOL

New Fabrics ..... May 14
Backed, Double, and Treble Cloths ..... May 21
Problems of Bradford Intersecting Gill ..... May 28

SILK

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Modern Soaking ..... May 21
Raw Silk Classification.... May 28

RAYON

Ribbon Effect in Warps.... May 14
Adjusting Loom Lay..... May 21
Testing Delustered Acetate May 28

KNITTING

Styling Half Hose..... May 14
Full-Fashioned Narrowing. May 21
Cut-Presser Designing.... May 28

PROCESSING

Finishing Glove Silk ..... May 14
Degumming Silk-Wool Mixtures ..... May 21
Bleaching Cotton-Rayon Hosiery ..... May 28

ENGINEERING

Waste Heat in Water..... May 14
Textile-Mill Lighting .... May 21
Efficient Lubrication ..... May 28

Textile World

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Textile World

ESTABLISHED 1868

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Textile World

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Editor: Douglas G. Woolf

Will Garvan Put Action into the Talkie?

MAURICE HOLLAND was not trying to please textile men when he spoke at the luncheon-reception in honor of Francis P. Garvan, new president of U. S. Institute for Textile Research, Wednesday. On the contrary he was apparently trying to arouse them by the challenge method.

That he succeeded, we have no doubt. For example, we can sense the reaction of many technicians to the statement that "the last page in textile invention was written in that era of vanishing American genius when Northrop's loom was developed in the late 90's." We can also imagine the unexpressed demand for specifications which the following statements evoked: "Only a boiler factory rivals a textile mill in developing fatigue factors to distress the over-worked operatives. Raw materials travel miles and wear themselves out passing from one machine to another. It is a miracle to me that anything comes out of them but chaff and dust. The poor cotton fibers must be completely exhausted."

▼

But no matter how much textile men may want to qualify certain of the opinions expressed by Mr. Holland; no matter how good-humoredly, or otherwise, they may point out the license of which publicists, as well as poets, avail themselves—they cannot dispute, successfully, the speaker's main story. There is but one answer to the following question asked by Mr. Holland:

"Who said that in order to make a cotton fabric you had to put these individual fibers through all these processes: carding, drawing, roving, winding and weaving? Perhaps around the corner in some synthetic ice-box there is a process similar to that used in synthetic plastic components that will convert the cotton fibers directly into fabrics that will be superior to those now turned out. All that is needed is the thawing influence of a place 'in the sun of applied science.' "

Similarly, there can be little ground for quarrel with Mr. Holland's statement that his picture of research in the textile industry is a motion picture—gone modern; a talkie, impressive with sound effects, but in which there is little or no action—particularly since he emphasized the fact that he was speaking of *fundamental cooperative research* in the interest of the whole industry.

▼

The picture of that kind of research in textiles *has* been a talkie. Despite the efforts of many long-visioned men, there has been little if any action in it. And when at last the formation of U. S. Institute for Textile Research and the Textile Foundation seemed to foreshadow a way out, progress was arrested by the natural lethargy of manufacturers in research matters, combined with the excuse which the economic situation has offered.

Into this picture comes Francis P. Garvan, known as a man of action. The esteem in which he is held by the textile industry was demonstrated Wednesday. Will he be able to make fundamental cooperative research in textiles more than an abstract term? Will he be able to put action into the talkie?

If he does—and we are rooting for him—he will have put research to work in one of the most fertile industrial fields.

The Week in Textiles

as Reflected in This Issue

General

Garvan and Research

Francis P. Garvan, newly elected president of United States Institute for Textile Research, was honored at a luncheon in New York on Wednesday. The industry was well represented at the event and showed encouraging enthusiasm in supporting a research program. *(page 16)*

Self-Cleaning Motors

The results of a test conducted on textile motors to determine the actual advantages of the self-cleaning type reveals some interesting data. Minimizing of danger from neglect is the outstanding feature. *(page 24)*

Microanalysis of Fibers

The uses of the microscope for fiber identification and grading, for studying fiber structure and properties, and for investigating the effect of moisture and heat on fibers are discussed. *(page 25)*

Shrinkage Is "Stretchage"

"The truth about shrinkage is that it is actually *stretchage*" paradoxes Better Fabrics Testing Bureau. *(page 30)*

Upholstery Wage Reduction

A labor agreement in the Philadelphia upholstery trade involves a wage reduction averaging 15%, but involving bonus for short runs, unemployment insurance, etc. *(page 31)*

Textile Dryers of Unique Design

A series of new dryers based upon a novel method of air circulation and manner of conveying the stock are described. *(page 36)*

Cotton

Suitings from Coarse Yarns

Description is offered of several attractive fabrics constructed of coarse cotton yarns and exhibiting interesting color and weave effects. *(page 18)*

Gain and Ratch on Mules

The true meaning of gain and ratch on cotton mules and a means of measuring these two factors are explained. The use and beneficial effects of these operations are discussed. *(page 22)*

Cotton Fabric Shoes

Increased popularity of cotton fabric shoes among women and children makes them one of the features of National Cotton Week. Sales of such items in 1931 showed an increase of 83% over 1930 and uptrend continues. *(page 23)*

Raw Cotton Sags

Cotton has sagged further under weight of large supplies despite evidence that world consumption is now on a larger scale. *(page 45)*

Yarns Are Hit Again

Cotton yarns have been hit by lower cotton just at a time when stabilization seemed just around the corner. However many of the current low offers are being turned down. *(page 45)*

Goods Market Temporizes

Cotton goods have lost some of their former firmness but current low figures are quoted only on goods for quick shipment. Later deliveries will, it is expected, be steadied by two weeks shutdown out of May, June and July, and prices based on cost rather than distress may then be possible. *(page 49)*

Wool

Urges Group Action

The report by Paul T. Cherington on the wool goods trade prepared on request of the Textile Foundation recommends group action as essential for the welfare of this trade. *(page 21)*

Wools Still Weak

Downward price trend due to absence of support is still a feature of the wool market. Lack of volume leaves prices nominal. Buyers are apathetic toward the new clip. *(page 47)*

Yarns Mark Time

Worsted yarns mark time with little change. Even extreme price concessions fail to arouse buying interest and dealers recognize that confidence can best be built by holding on a firmer basis. There is apprehension that the weaving and knitting trades will actually lose business later in the season by not having adequate supply of yarns to put quickly through the works. *(page 45)*

Fabric Mills May Close

Continued reports of individual shutdowns by wool goods mills have strengthened the possibility of a general shutdown which some weavers regard as the only way to offset declining prices. *(page 49)*

The Textile Outlook

EVIDENCE that consumer takings of textiles have remained far subnormal for some time is to be found in the shrinkage of retail operations in such goods. Curtailment of mill operations has of course been in effect for many months but nevertheless it has lagged behind the true needs of the situation. Plans now involve closing cotton mills two weeks each month during the summer; a complete summer shutdown for the wool goods industry is recommended; the silk industry is running light; rayon producers are operating about 70% and not over 50% is recommended for the summer; underwear mills are said to be running 65% with hosiery mills slightly fuller. The best minds of the industry are in harmony with extension of this curtailment to its maximum so that once again there will be a slight excess of demand over supply, which, it seems, is the only condition in which prices involving fair profit margins may be maintained. Eventually consumer needs will cry for replenishment and restoration of spending and confidence will bring a return of better business. Mills which have closed down will likely be slow to start up unless a real chance for profit appears and so a reasonable demand-supply ratio may be maintained.

Knitting

Testing as Merchandising Aid

Routine testing of women's hosiery has proved to be a remarkable aid to one nationally known company. An explanation of the testing procedure and an outline of the fundamental data uncovered are presented. *(page 20)*

Sleaziness in Silk Hose

Improper conditioning of the silk resulting in faulty stitch formation is determined as the cause of sleaziness in silk hose. *(page 41)*

Expect Swimsuit Advance

Payment of premiums by buyers who want stocks in a hurry is being predicted in swimsuit industry, due to late season and low stocks. *(page 50)*

Underwear's Brief Rally

Underwear demand showed a sudden pick-up, then weakened again, and further improvement is dependent upon weather conditions. *(page 50)*

Mesh Hosiery Weakens

There are definite signs of weakening in the prices even of the best quality mesh hosiery, and mills are urged to slow down on output. *(page 50)*

Silk

Loom Let-Off Motions

Two new loom let-off motions of both the automatic and direct types are announced. The interesting feature is that these motions are entirely independent of friction as a contributory factor to the amount of tension in the warp. *(page 39)*

Wool Industry Sets Up "Advisory Board"

AT the first meeting of the delegates representing 12 associations in the wool and allied industries, held in New York on May 5, it was determined to call the body "The Wool Industry Advisory Board" and Col. C. F. H. Johnson, Botany Worsted Mills, was made permanent chairman. Walter Humphreys, National Association of Wool Manufacturers, was made secretary. The gathering was authorized by an industry-wide meeting last month. It was voted to appoint a sub-committee to fix scope and activities of the board and it was stressed that it was essentially advisory in character. S. H. Gardner, International Association of Garment Manufacturers, proposed the following 5-point program which will be considered: (1) studies of supply-demand situation in all divisions, (2) of price competitions, (3) of price situation in relation to Federal law, (4) of yarn and fiber industries with aim toward promotion, (5) and submission by each group within the board of a digest of its chief problems. W. I. A. B. will meet soon again in New York.

New Outlets Help Spinners

Sharp drop in demand for shantung fabrics which was a major outlet, forces silk spinners to step up their development of new markets. Despite handicap of limited research funds, much progress in that direction has been made, as indicated in TEXTILE WORLD Analyst. *(page 43)*

Silk Gets a Tonic

Stronger cables from Japan proved a tonic to raw silk this week, but with demand sluggish, the improvement was expected to be brief. *(page 47)*

Better Yarn Tone

Advancing season has helped thrown and spun yarn sentiment; spinners fairly active but thrown yarn slow. *(page 47)*

Cool Weather Hurts Broadsilks

Spurt in call for printed summer sheers which cheered weavers for a week, waned and now the outlook is uncertain. *(page 49)*

Rayon

Silk Nibs in Staple Yarn

To secure a good silk nib in a rayon staple yarn it is suggested that a nib machine will be used so that the nibs will enter the yarn just behind the last two workers on the card. *(41)*

50%—Or a Shutdown?

With yarn sales continuing to decline, rayon producers face the choice of curtailing to 50% of capacity, or closing their plants. *(page 47)*

The Business Outlook

AS we move into May the slight spring spurt of early April seems to be petering out. Steel mill activity is still slowly increasing under the uncertain stimulus of low-price automobile production, but the price structure is weakening under competitive consumer pressure and prospects of further wage cuts. Electric power production and merchandise carloadings show slackening response to seasonal influences. Building contracts made a better showing in April and have stopped declining, but are below a subsistence basis. Commodity price averages show some tendency to stabilization, but security markets have slid off to pre-war levels under legislative uncertainties and necessitous liquidation. Foreign hysteria over "inflation" has come to the surface and started gold exports again. In spite of all these discouraging developments the basic conditions for business recovery are being quite clearly established, although they are utterly and almost universally ignored. Administration measures and Federal Reserve efforts have unquestionably created an enormous improvement in the banking position in the last two months, but the campaign for credit expansion is at a standstill because Congressional chaos has wrecked business and banking confidence.—*The Business Week.*

Processing

Scouring Rayon-Cotton Satins

A good procedure for removing mineral-oil stains from a rayon-cotton satin without damaging the material is outlined. Mineral stains must be given special treatment. *(page 40)*

Chafe Marks in Rayon Knit Goods

Chafing of the goods in some process previous to dyeing results in white of light gray coatings on the finished fabric. There is no way of removing chafe marks, but they may be toned down by dyeing with light shades. *(page 41)*

Poor Conditioning Causes Bands

Improper conditioning of the silk is determined as the cause of horizontal streaks in full-fashioned hose. Application of more emulsion may remedy this condition. *(page 40)*

Entire Industry Honors Garvan

and Gets Behind Research Move

COOPERATIVE fundamental research in the textile industry, and the part which Francis P. Garvan is to play in it as president of the U. S. Institute for Textile Research, received the pledge of unanimous support from practically all textile organizations at the luncheon-reception to Mr. Garvan at the Hotel Biltmore, New York, Wednesday.

This was undoubtedly the most inspiring and most hopeful gathering in the interest of such research in the history of the industry. The psychology reflected there reminded this observer of the spontaneous enthusiasm at Atlanta six years ago which led to the formation of The Cotton-Textile Institute. Therefore it encouraged the hope that the future of this movement along technical lines will be marked by success similar to that which attended the earlier movement in an economic direction; and that, in view of the representative character of the gathering, it will apply to all branches within the industry.

Textile association executives spoke in the highest terms of the work which Mr. Garvan did in making possible the creation and growth of the American chemical industry; and predicted similar results in the textile industry now that his crusading activity is to be directed toward that field. Those who spoke included Franklin W. Hobbs, chairman of the Textile Foundation and president of the National Association of Wool Manufacturers; George A. Sloan, president of the Cotton-Textile Institute; August Merz, president of the Synthetic Organic Chemical Manufacturers Association; Ernest N. Hood, treasurer of the U. S. Institute, who spoke for the National Association of Cotton Manufacturers in the absence of President Irving Southworth; and Earl Constantine, managing director of the National Association of Hosiery & Underwear Manufacturers. A glowing tribute was also paid to Mr. Garvan by Dr. Charles H. Herty, former president of the American Chemical Society.

Messages of congratulation were read from Secretary of Commerce Lamont, Secretary of Agriculture Hyde, and Stuart W. Cramer, all directors of the Textile Foundation; and from the heads of the Bureau of Standards, American Cotton Manufacturers Association, Institute of Carpet Manufacturers of America, National Association of Finishers of Cotton Fabrics, Cotton Manufacturers Association of North Carolina, and Cotton Manufacturers Association of Georgia.

Other organizations which were represented at the meeting included the Silk Association of America, Association of Cotton Textile Merchants of New York, Silk Dyers & Printers Association, and American Association of Textile Chemists & Colorists.

Garvan, the Fighter, Replies

At the request of H. V. R. Scheel, vice-president of the Botany Worsted Mills, who acted as toastmaster, Mr. Garvan was introduced to the members by Dr. E. L. Killheffer.

The reputation as a fighter which Mr. Garvan enjoys was reenforced by his opening remarks in acknowledging the many tributes paid him. Mr. Scheel had inadvertently referred to the new president as Francis H. Garvan. "The toastmaster left out the most important part of my name," said Mr. Garvan; "my name is Francis Patrick Garvan, and the 'Patrick' is the reason I am here."

Very briefly, Mr. Garvan referred to the changes which had taken place during the last 40 years in the markets for textiles as the result of the development of an educated and homogeneous population. "From today," he stated, "we will go to work, we will all pull together, and we will make a success of it. Tomorrow we will be going up the hill but the one thing we won't forget is that today we start to fight and to do in this industry what we did so successfully in the chemical industry."

Prior to the presentation of greetings to Mr. Garvan, several addresses and papers were read. In the absence of Prof. E. R. Schwarz, of Massachusetts Institute of Technology, Charles H. Clark, secretary of the U. S. Institute, presented Prof. Schwarz's report on the book which the Institute is preparing on "Textile and Allied Research: A Review of Progress."

Textile Research Called a "Talkie"

"My picture of research in the textile industry is a motion picture—gone modern," said Maurice Holland, of the National Research Council. "It has all the drama, romance, and even mystery of most feature pictures but from where I stand it appears to me—to be a talkie! It is impressive with sound effects, but there is little or no action! I'm speaking now of fundamental cooperative research in the interest of the whole industry."

Mr. Holland said, in part:

"The textile industry in America, as I see it, is a 1932 model car running around on a gay '90 chassis. The essential manufacturing processes have not been changed in 100 years, and the last page in textile invention was written in that era of vanishing American genius when Northrop's loom was developed in the late '90's. Only a boiler factory rivals a textile mill in developing fatigue factors to distress the over-worked operators.

"Raw materials travel miles and wear themselves out passing from one machine to another.

"It is a miracle to me that anything comes out of them but chaff and dust. The poor cotton fibers must be completely exhausted. If they could tell a story of the fatigue phenomena through which they have passed on the long road from the cotton bale to the finished fabric, it would make some of the present-day calamity-howlers sit up and take notice. *De*pression and *com*pression, is an every day occur-

rence in the family of fibers. Family life is a series of tearing apart, putting together, until it must be an obsession!

"Who said that in order to make a cotton fabric you had to put these individual fibers through all these processes—carding, drawing, roving, winding and weaving? Perhaps around the corner in some scientific ice-box there is a process similar to that used in synthetic plastic components which will convert the cotton fibers directly into fabrics that will be superior to those now turned out. All that is needed is the thawing influence of a place in the 'sun of applied science.'

"There is fundamental research work going on in fields of science not far remote from the textile industry, yet with applications which may eliminate the 'riveting hammer' noise of loom and shuttle, speed up production, and turn out a better quality fabric. There are a dozen types of textile fabrics which could be made from cotton to better serve a dozen new uses of man.

"A few illustrations of new fabrics which occur to me at once are cotton fabrics which afford more uniform temperature regulation for the human body, a health measure, fabrics which absorb perspiration and prevent summer colds, others which afford some measure of insulation against cold winds; still other fabrics which offer softer texture next to the skin and those which can take advantage of cotton's natural advantages as style factors. In the industrial field there is need for metallized and fireproof fabrics—at a price, while waterproof fabrics are a myth in America.

"Within a month, I have been told by the Curator of Paintings of the Metropolitan Museum of Art, that it is practically impossible to get a modern canvas for oil paintings which compares with those manufactured in the sixteenth or seventeenth centuries. There is a challenge to your industry. That is the kind of job that science tackles with success.

"A few large companies in the industry have excellent private research laboratories. Most of these, however, appear to be development work, testing, and 'trouble shooting' departments; going 'high-brow' with the much abused name —'research.' My guess is that the fundamental scientific discoveries, which will revolutionize the textile industry, will come out of the university laboratories. Research dollars are the premium on a policy of 'industrial life.' The industry may yet pay tribute, in the present war of industrial competition. . . . .

"It has been demonstrated repeatedly in the history of American industries that research is a paying investment. Ask your banker. He knows!"

Francis P. Garvan, honored by the industry on his acceptance of the presidency of the U. S. Institute for Textile Research

Compton Cites M.I.T. Relations

After briefly outlining the kinds of service which educational institutions are rendering to industry, Dr. Karl T. Compton, president of Massachusetts Institute of Technology, spoke of the relations which have existed in recent years at that institution. He said:

"In the first place, my honored predecessor, the late President Samuel W. Stratton, was also Mr. Garvan's predecessor as president of U. S. Institute for Textile Research, and was very keenly interested in the problem of finding ways in which science could be made of benefit to the textile industry. In the second place, our institution maintains a Textile Research Laboratory, where among other things there have been designed about a dozen special machines to be used by industrial firms for testing various mechanical properties of fabrics and fibers. In addition to this laboratory, work on chemical and other aspects of textile problems is being carried out in other departments of the Institute. In the third place, a member of our staff edits "Textile Research Abstracts," a publication which will be of increasing value as research in this field develops, and toward which the Institute is making a financial contribution. In the fourth place, the Institute is carrying on a variety of research problems with the aid of a grant from the funds of the Textile Foundation.

In the fifth place, individual members of the staff of the Institute have assisted the Textile Foundation in planning and putting into operation the Textile Research Fellowships, which are designed to produce centers of textile research in educational institutions all over the country, to attract into the textile field some of the most promising graduate and postgraduate students in these institutions and gradually to make the textile industry 'research-minded.' It may safely be said that these mutual contacts between the textile industry and the universities will increase in importance and in mutual benefit.

"Coming finally to the most particular objective of my remarks, Mr. Garvan himself, I simply wish to say that we in the educational institutions as well as those in other fields, recognize the tremendous service which Mr. Garvan has rendered both to American industries and to the stimulation of research in American educational institutions. Through his work as head of the Chemical Foundation, he has created a new era in the American chemical industry. As part of his farsighted policy in creating this industry, he has stimulated interest in chemistry, physics and medicine throughout the entire educational plant of the country from the high schools through to the colleges, post-graduate schools and beyond. He has generously contributed his support in directions where the returns were not sufficiently obvious or immediate to gain the support of a man of lesser vision. In supporting scientific publications, in assisting scientific organizations to grow and become self-supporting, in subsidizing projects here and there which are of such fundamental interest as to show ultimate promise of great value, he has played a remarkably effective rôle in those scientific developments of the last decade toward which we can look with pride and hope.

"With this background, the textile industry, which surely needs assistance and far-sighted leadership, is certainly to be congratulated in welcoming the Hon. Francis P. Garvan to the position of leadership in the United States Institute for Textile Research."

Researches Reported to Institute

William D. Appel, chief of textile section, U. S. Bureau of Standards, discussed the meaning to the mill men of recent investigations of electrophoresis and pH of wool and silk. These researches which were carried out at the Bureau of Standards by Dr. Milton Harris, research associate of the American Association of Textile Chemists and Colorists, indicate that the iso-electric points of wool and silk fibroin are about pH 3.4 and pH 2.5, respectively.

These experimental studies have shown also that the further the pH of the bath in which wool is processed is from the iso-electric point the greater will be the action on the wool. Likewise it has been demonstrated that the pH of the baths employed in finishing silk have marked effect upon the tendering of the fibers upon exposure to light, contrary to expectations, silk treated with a fairly strong alkaline solution (pH 10) having the maximum stability to light. Further investigations are now in progress to determine the effect of the carbonizing process and of pH in wool dyeing.

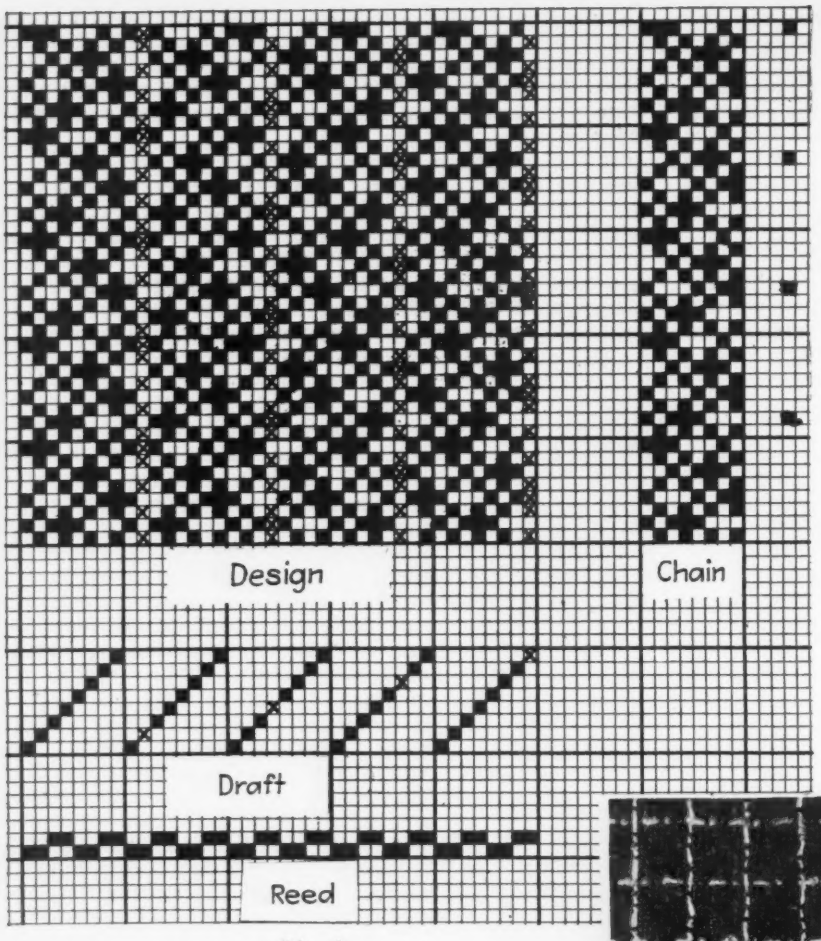


Fig. 2

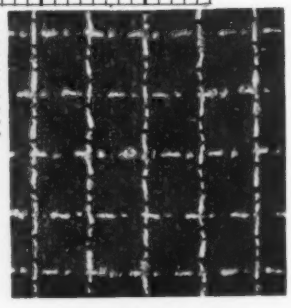


Fig. 1

Attractive Suitings

Woven from Coarse Cotton Yarns

By T. R. Hart

Associate Professor of Wearing and Designing, North Carolina State College

THAT coarse cotton yarns can be woven into attractive and salable fabrics for suitings and sports wear is demonstrated by the accompanying illustrations, which represent a number of fabrics that have proved popular in these lines.

The design, drawing-in draft, chain plan, and reed plan for the fabric shown in Fig. 1 are given at Fig. 2. The fabric is woven with an eight-harness granite weave in which the odd ends throughout the design weave under the filling for three consecutive picks out of every eight, while the even ends float the warp for three consecutive picks out of every eight. The warp is drawn in, nine ends of black and one end of red- and-white fancy-twist yarn, so that in each pattern every end of the fancy-twist yarn is drawn in a different harness. This causes the fancy-twist yarn to be drawn in on the even harnesses, which raise the warp and distribute minute floats of the fancy yarn on the face of the fabric in four-harness, broken-twill order.

The fabric is picked exactly as it is warped. The squares filled in at the right of the chain plan indicate the picks on which the fancy yarn is inserted. By following these picks in the design it will be seen that minute floats of the fancy yarn are also formed on the face of the fabric by the filling and that they are distributed in four-harness, broken-twill order. Thus, by taking advantage of the warp and filling floats in the design, arranging the colors accordingly, a neat pattern can be made on a small number of harnesses. Other methods of coloring this fabric are to substitute suitable colors of warp and filling for those used; for instance, green for black in both warp and filling.

This pattern was woven on a pick-and-pick loom using a No. 16 reed with two ends drawn through each dent. The black warp and filling are 20/2, and the fancy yarn was made by twisting one end of 60/2 red around two ends of 20/2 white. By warping and picking two red-and-white ends together the fancy effect would be more pronounced, and the fabric could be woven on an ordinary 2x1-box dobby loom.

Entwining Twill Pattern

Fig. 3 is a neat pattern formed by right- and left-hand twill lines running at right angles to each other and forming what is known as an entwining twill. The design, drawing-in draft, and reed plan for this fabric are shown at Fig. 4. The chain plan would be the same as the design except that additional harnesses would have to be added to weave the selvage.

The warp for this fabric is 20/2 white and the filling

is 20/2 dark brown. By changing the filling to black, green, or maroon, other attractive patterns can be made. It was woven with a number 22 reed, using two ends per dent.

Star and Diamond Checks

A species of star check formed by a combination of weave and color is illustrated in Fig. 5. The design, drawing-in draft, chain plan, and reed plan for this pattern are given at Fig. 6. By referring to the design, it will be noticed that the base weave repeats on twelve ends and picks; but, as the fabric is warped and picked twelve white, twelve green, it requires 24 ends and picks to complete the pattern. When the white filling crosses the white warp it forms a 12x12 square of solid white, but the floats of warp and filling which adjoin this square convert the pattern into a star design. Other suitable colorings for a fabric of this type would be black and white, dark brown and white, or maroon and white. The warp and filling used in this fabric is 20/2; and it is woven with a number 22 reed, the ends being drawn two in a dent.

Fig. 7, which is a diamond-shaped check, is also formed by a combination of weave and color. The design, drawing-in draft, and reed plan for this fabric are shown at Fig. 8. The chain plan would be the same as the design, except that additional harnesses must be added to weave the selvage.

This design is formed on a different basis from the one given in Fig. 6; for instead of being two repeats warp way and filling way of the base weave, it will be noticed that this design is formed of alternate squares of plain weave and alternate squares of half diamonds.

The pattern is warped and picked ten black, ten black-and-white fancy-twist yarn. When the black filling crosses the black warp in the plain-weave section, it forms a solid square of black, 10x10; but the half-diamond filling floats at each side, and the half-diamond warp floats at the top and bottom of the square convert it into a solid-black diamond. Likewise the interweaving of the fancy yarns forms a gray diamond.

The black yarn used in this fabric is 20/2 and the black-and-white fancy yarn was made by twisting one end of 60/2 black around two ends of 20/2 white. In weaving the fabric, two ends per dent were drawn through a No. 16 reed.

This fabric can be produced in a wide range of colors, but better results will probably be obtained by having the color in the fancy yarn the same as that used in the other yarn. This design also produces attractive patterns without the use of fancy yarns when suitable contrasting colors are used.

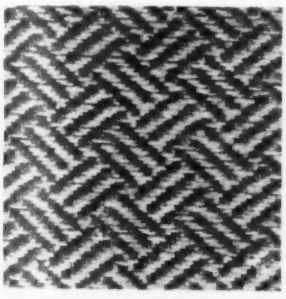


Fig. 3

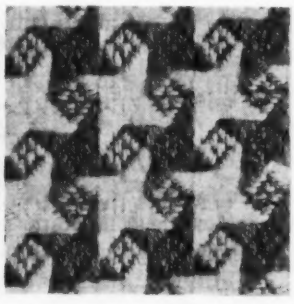


Fig. 5

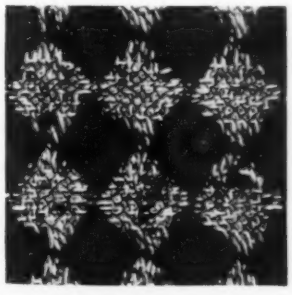


Fig. 7

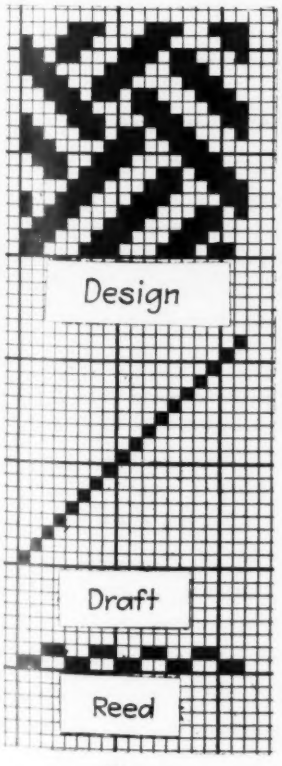


Fig. 4

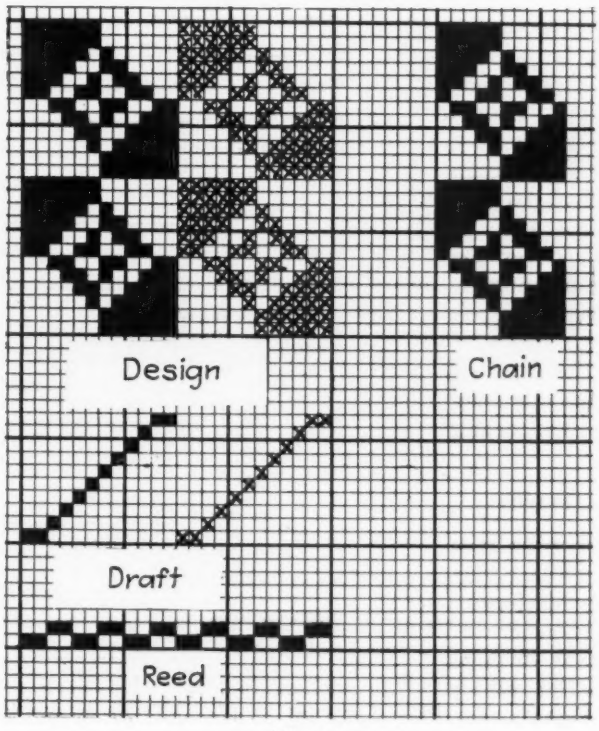


Fig. 6

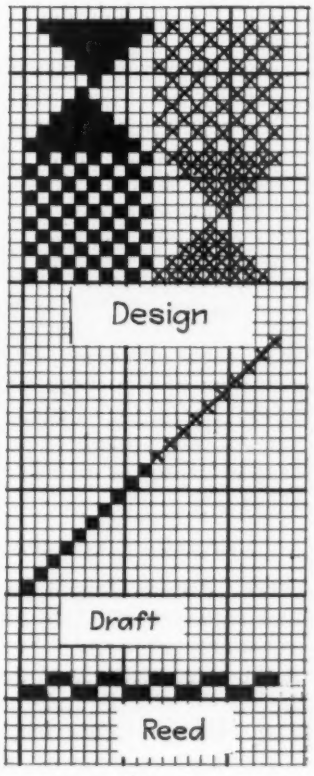


Fig. 8

Thorough Hosiery Testing Is Merchandising Aid *for Brown-Durrell*

AFTER a year's experience with what is probably the first comprehensive application of precise testing methods to the routine examination of women's hosiery, Brown Durrell Co., distributors of "Gordon" hosiery and "Forest Mills" underwear, finds the results so beneficial that the plan will be extended to include underwear and children's socks.

Any company that distributes under a nationally advertised name must be jealous of its reputation; otherwise the national advertising would prove disastrous. Brown Durrell Co. has certain specifications covering its various numbers of hosiery, with each style, of course, calling for individual particulars in accordance with price range, type of hosiery, etc. These specifications cover the usual features of gauge, number of threads, twist, needles, courses, etc. A desire to check each item of the specifications with a greater thoroughness than usual, with the idea of standardizing quality as a merchandising weapon led to the establishment of the testing laboratory.

Laboratory Valuable to Customers

Both Brown Durrell Co. and the mills have been rather startled by the manner in which real examination has shown up the deficiencies of the older methods of appraising hosiery by the rule-of-thumb judgment gained through many years of experience. The laboratory has proved of value to Brown Durrell Co., to its customers, and to the hosiery mills, in that many hitherto obscure causes and effects have been brought to light. The form used to record the tests (Fig. 1) shows the extent of the examination and the pains taken to check every item that has a bearing on the quality and wearing properties of the stocking. One of the first discoveries was that there were some cases where there was unconscious deviation from the exact specifications. Such deviations had escaped the mill and would have escaped the less precise examination usual in the trade.

Perhaps of even greater interest, however, was the fact that a considerable variation in two stockings was often disclosed, even though both conformed to specifications. The bursting strength of heel or toe, or the tensile strength of the seaming thread, can have a considerable bearing on the wearing properties of hosiery, although such items are not covered in the usual hosiery details.

Fundamental Data Uncovered

In addition to making certain that each case of hosiery accepted—and passed on to the customer—meets the standard, useful information has been secured to guide the company in setting up new lines and in improving old ones. Through cooperation with the mills it has been possible to study the effect of silk twist on the strength of the knitted fabric; the advantages and disadvantages of using certain yarns in the heel, toe, leg, or top; and allied subjects. The longer the laboratory is in operation the greater the amount of data the company has available to assist in guiding its judgment.

The list of instruments used is as follows: Binocular microscope, which gives three dimensions to the object viewed and presents it right side up—counting needle attached; Suter twist tester; Mullen bursting strength machine with motor; Lunometer course counter; Suter single-strand tester for tensile strength; daylight lamps; and torsion balance.

BROWN DURRELL CO.

Date Case Rec'd_____ Date Inspected_____

Style #_____ Mill_____ Color_____

Case #_____ Proportion_____

Gauge _____ Tensile strength of silk in:

Needles below welt _____ welt_____

Narrowings below welt_____ boot_____

" in calf _____ heel_____

" in sole _____ sole_____

Courses below welt _____ toe _____

" in calf _____ Tensile strength of cotton in:

" below transfer_____ welt_____

Bursting strength of: heel_____

welt _____ sole_____

boot _____ toe _____

transfer point_____ Tensile strength of seaming yarn_____

heel _____ Turns per inch in face of welt_____

toe side _____ Turns per inch in boot_____

toe center _____ Strands in boot thread_____

Weight per pair _____ Filaments in boot thread_____

Weight per dozen _____ Fastness of color to fading_____

Grade of silk _____ Fastness of color to washing_____

Fig. 1. Form used by Brown Durrell Co. to record data of hosiery test

Cherington Report

Recommends Group Action in Wool Goods

Paul T. Cherington

A FACTUAL cross section of the woolen and worsted industries dealing with distribution problems is outlined in a report by Paul T. Cherington, entitled "The Distribution Problems of the Woolen and Worsted Industries." It was prepared for the Textile Foundation and will soon be available in book form. In response to demands by the trade, a digest of the book has been made by members of the advisory committee and may be had, gratis, from the Textile Foundation, Commerce Building, Washington, D. C.

Mr. Cherington's book gives a program of economic reforms that should be first consummated within the industry. Anticipating primarily the desires of the consuming public he shows how individual mills may through joint action effect this. The book outlines a suggested use of agencies now existent in the Government to maintain current factual data which may be supplemented by other material and finally correlated and interpreted by a detached scientific research agency.

Two forms of planning activity are suggested for the industry as a whole:—first, inter-industry committees, to work on specific problems such as color standardization and other matters calling for clear understanding between competitive or supplementary groups;—second, economic councils of small groups working in a narrow competitive field, such as the pile fabric group, the fancy woolen group and others having pressing problems of a specific nature in which all mills in that particular group are directly concerned.

In addition to these two types of joint activity the report stresses the necessity for individual mills to interpret currently their own experience in terms of operating plans for the immediate future on the basis of probability curves developed out of past records.

The program of betterment is formulated for point by point discussion under ten separate headings as follows:

1. The preservation and expansion of the Federal Census Bureau's present reports on wool consumption and active and idle machinery, garment cutting and other current operations.

2. Enough already has been undertaken in this direction to suggest the possibility of using the woolen and worsted industries as a model for complete coverage with current statistics such as are outlined elsewhere in the report.

3. Interpretive work dealing with these figures, other basic data, and special compilations gathered from time to time, should be undertaken for the industries (and financed by them) by such institutions as the Industrial Research Bureau of the University of Pennsylvania, the Bureau of Business Research of Harvard University, and other similar institutions prepared to do analytical work of this sort.

4. Inter-association projects might well be undertaken jointly by the National Association of Wool Manufacturers working with the Garment Association, the National Retail Dry Goods Association and, when occasion arises, with the manufacturers of other fibers, to end some of the more disturbing causes of confusion in textile distribution.

5. Either through the National Association of Wool Manufacturers, or independently, there should be formed specialized Economic Councils for the wool fabric industries to consider ways to bring about improvement of underlying conditions. These Economic Councils should have as advisory members two or three men from outside of the industry representing the law or the public or both who would discuss all projects from a social point of view.

6. Cooperation with the United States Institute for Textile Research is suggested as a means for accomplishing some of the foregoing ends as well as for furthering research in technical fields.

7. Existing bureaus and services designed to help in the solution of style problems ought to be encouraged and perfected.

8. Mills and selling houses which do not now have an adequate or properly manned statistical staff should be encouraged to develop one. They can be made to more than pay their way; and no betterment of a lasting sort can be expected without adequate individual statistical equipment.

9. The development of a keener statistical sense on the part of many mill men is suggested as a desirable aid to improvement.

10. Thus equipped with statistical background, the responsibility falls on individual concerns to use the underlying figures and the factual records of their own current sales to project plans for a safe distance ahead of any given time.

Consumer Interest Paramount

The cardinal feature of this suggested program is that it recognizes the best interests of the consuming public as the final measure of success or failure for individual concerns as well as for these industries as a whole. It differs from most other economic programs in that it puts the responsibility for discovering and keeping in touch with those interests, squarely upon the component members of the industry.

Gain and Ratch on Cotton Mule *and Problems They Present*

By H. Greenhalgh

FOR the benefit of those readers who may not be familiar with mule terminology, it may be well first to point out that gain is the difference in inches between the distance the carriage travels before the rolls are stopped and the amount delivered by the rolls, and that ratch is the amount that the carriage is moved after the roller clutch box has been disengaged and the rolls have stopped. On a fine mule, with a full travel of 62 in., if the front rollers deliver 60 in. of yarn for 61.5 in. of carriage travel, the gain is 1.5 in.; and if the rolls are stopped when the carriage has traveled 61.5 in., the ratch is 62 in. minus 61.5 in., or 0.5 in.

From the foregoing discussion it must not be assumed that the carriage pulls the 60 in. delivered by the roller into 62 in., for topping of the spindles has a big influence on gain. To find the actual amount the carriage stretches the yarn for gain, the length of yarn between the spindle point and the roller nip when the carriage is against the back stop should be subtracted from the length of yarn between these two points when the roller clutch box has been disengaged. Then from the answer should be subtracted the inches delivered.

For example, if the length of yarn with the mule in is 4.5 in., if the roller delivers 60 in., and if the length when the rolls are stopped is 65 in., then the gain is $65 - (4.5 + 60) = 0.5$ in. To find the distance between the spindle points and the nip of the rollers with the carriage in, multiply the downward topping by itself and do the same with the forward topping; then add the two together and find the square root of the result. If the downward topping is 3 in., and the forward topping 3.25 in., then $(3 \times 3) + (3.25 \times 3.25) = 19.55$. The square root of 19.55 is 4.42.

To find the distance between the spindle points and the roller nip when the roller clutch box is disengaged, multiply the downward topping by itself; then add the forward topping to the distance the carriage traveled before the rollers were stopped, and multiply the answer by itself. Add this result to the downward topping squared, and find the square root of the result. For example, if the down topping is 3 in., the forward topping is 3.25 in., and the carriage travel before stopping the front roll is 61.5 in., the calculation would be as follows: $61.5 + 3.25 = 64.75$ in. Then $(3 \times 3) + (64.75 \times 64.75) = 4199.0$. The square root is 64.85.

The amount that the carriage is moved by the ratching is practically equal to the amount the yarn is pulled out by the ratching. Remember, in mill terms, the gain is usually estimated by subtracting the amount the rollers deliver each draw from the distance the carriage travels before the rollers are stopped. Therefore, in mill terms, a mule would be said to have no gain should the carriage be traveling at just the same speed as the surface speed of the front rollers. Yet, in truth, there would be a loss of about 1.4 in. with the topping given above and a carriage travel of 62 in., the rolls delivering the same.

The purpose of gain and ratch is not only to pull thick places out of the yarn, but to distribute the twist evenly in the yarn made during the draw. The twist tends to distribute itself throughout the yarn inversely as the diameter of the yarn multiplied by itself three times.

For example, if in one part of the yarn being produced, the diameter were twice as great as the normal diameter, the twist inserted in the fixed place would be $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$, or $\frac{1}{8}$ the twist put in yarn of normal diameter. This shows that if the yarn is drawn out by means of ratch or gain, the soft-twisted, thick places will be those which receive the most stretching; and the more they are drawn out, the more will be the tendency for the twist to distribute itself evenly through every part of the yarn. In addition, the stretching action of gain and ratch helps to keep the fibers loose among themselves, assisting them in twisting evenly around each other.

Ratch exerts a greater strain upon the thread than does gain. During ratching, the percentage of twist put in the yarn is gradually increasing; but when gain is employed, the twist does not exceed 75% of the total—very often less. Ratch, however, is dealing with a length of yarn almost equal to the mule stretch; hence it has a better chance of pulling out thick places without breaking or straining the yarn than has gain, the latter dealing with comparatively short lengths of yarn. Also, on fine mules fitted with a double-speed motion, the speed of the spindle may be increased 30 to 40% during ratching and twisting at the head. This more forcibly shakes and vibrates the yarn, thus causing the twist to distribute itself more evenly.

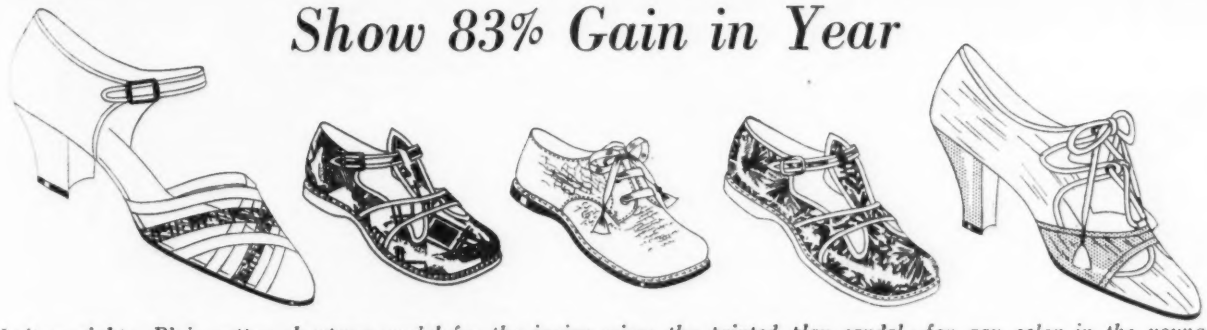
Sometimes the beneficial effects of gain and ratch in regard to twist distribution are not fully secured until the next process, at which time the twist has a chance to even.

When considering gain, it is well to know how it is applied to yarn at different parts of the mule draw. Even with mules spinning fine counts and having a large gain, there is no real gain applied to yarn for the first few inches of the outward movement of the carriage from the back stop. The true cause of this is the effect the topping has upon the gain. On a fine mule, with 3.25 in. down topping and 3.75 in. forward topping, the carriage, in starting from the back stop, would have to move 1.324 times faster than the surface speed of the front roll to take up the yarn delivered by the front roll —when the carriage is 1 in. on its outward run, 1.21 times faster; 2 in. out, 1.147 times faster; 3 in. out, 1.109 times faster; 4 in. out, 1.084 times faster.

This indicates that the carriage will be quite a few inches from the back stop before it will be taking up the yarn delivered by the front roll. From this point on to the end of the draw, the end of the carriage would take up yarn faster than the rollers delivered it and thus insert true gain in the yarn. Consequently, in the first few inches of carriage travel, snarls are often plentiful.

Cotton Fabric Shoes *Feature of Cotton Week*

Show 83% Gain in Year



Left to right: Plain cotton shantung sandal for the junior miss; the printed play sandal—for gay color in the young child's costume; the boy's oxford of heavy woven cotton, comfortable and practical; the printed sandal for the older girl in an all-over print; the all-round sports sandal of cotton shantung in two colors.

Left to right: For beachwear and rough country wear, the rubber-soled oxford of striped cotton duck; the new tennis "ghillie" of white basket-weave cotton; the famous beach "clog" of no more than strips of black and white cotton webbing; a spectator sports shoe in printed cotton with a mesh fabric vamp (for cool comfort); a dressy sports sandal in two shades of cotton duck.

Left to right: Plain opera pump with cut-out vamp of a pebbly cotton; navy eyeleted town oxford; a sporty town shoe of beige cotton with brown leather trim; a striking black and white oxford of a new heavy-woven cotton mesh; a black cotton mesh oxford.

REPORTS to the Cotton-Textile Institute from merchants in various parts of the country indicate that cotton fabric shoes for women and children will have a prominent place in store promotions during National Cotton Week, May 16 to 21. Cotton fabrics of both fine and coarse texture and mesh, which are adaptable for either lined or unlined models, are in exceptionally high fashion favor this season.

Practically all of the well-known American "high style" women's shoe manufacturers have an important part of their summer lines confined to fabric models with cottons predominating. At the same time, a number of producers of popular-priced cotton fabric shoes, turning out footwear on a mass production basis to retail at $5 and less, state that their advance sales to retailers justify the expectation for a real volume business for the next three months.

Sandals for women and children in both plain and printed cotton fabrics are types destined for consumer favor of "best seller" proportions. Shoes of this class which are being brought out to retail from $1.25 to $2.50 incorporate many of the style features of higher priced shoes and are offered in a wide range of color effects and combinations. Advance sales restricted to a single group of retail stores of one popular model retailing at $1.50—a six strap lattice sandal—are already in excess of 25,000 pairs and indicate an unprecedented consumption of cotton fabrics for this use this season.

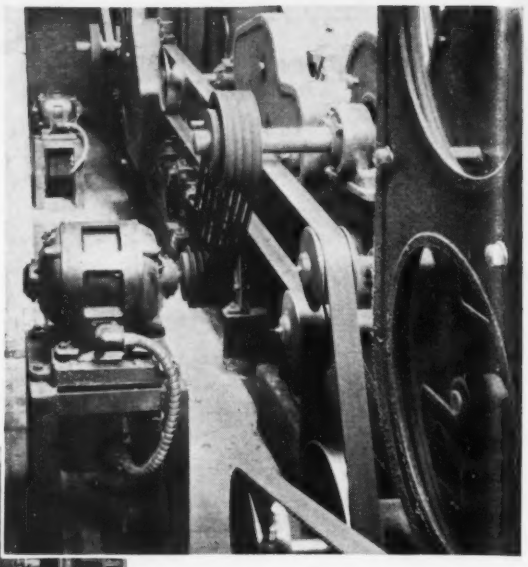
Although the popularity of cotton fabric shoes has gained great impetus this spring as the natural complement to cotton dresses, there has been a sustained increase in the production of this type of shoe during the last two years. During the calendar year of 1931, the U. S. Census Bureau figures show that 4,749,835 pairs of all-fabric shoes were manufactured—an increase of 83.2% over the 1930 production of 2,593,197 pairs. These statistics include all footwear manufactured for men, women and children but the preponderant part of the increase is accounted for by the growing favor of women's fabric shoes.

Self-Cleaning Motors

Minimize Danger from Neglect

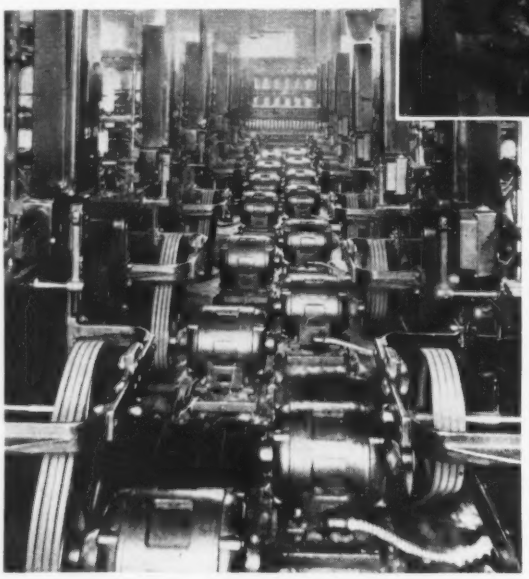
By Norman E. Elsas

Secretary, Fulton Bag & Cotton Mills, Atlanta, Ga.



Pickers driven by 3 and 5 hp., 1,800 r.p.m., self-cleaning motors in Fulton Mill at Atlanta

►*A review of the electrical developments of 1931 as they affect the textile industry reported the wide interest shown in the so-called self-cleaning motor, but suggested that the thick paste filler applied to the outside surfaces of the coils would not stand up in textile service. In order that the question might be more definitely settled, the opinion of Mr. Elsas, who has been observing the operation of a large installation of these motors in his mill for more than a year and a half, was solicited. In addition to shedding light on this particular matter in the accompanying article, Mr. Elsas offers other information regarding the merits of the installation.*



Installation of 7½-hp., 1,800 r.p.m., self-cleaning motors in spinning department of Fulton Bag & Cotton Mills, Atlanta, Ga.

THERE have been a number of articles written in the past year or so covering the subject of electric motors as applied particularly to the textile industry. Various manufacturers have made rapid strides toward the production of a motor that would stand up under the conditions of service imposed by this industry with the minimum of upkeep.

In general, the employees in textile establishments are not familiar at all with electrical equipment, and it is almost impossible to impress upon them the importance of cleaning. Often they do not fully appreciate how a small amount of lint can restrict ventilation enough to cause the motor to burn out when it is operating under the same load day in and day out. They can understand the necessity for oiling the bearings, but that is about as far as it goes.

Having this in mind, when the question arose as to what type of motor could be placed on the floor beside a spinning frame and be practically forgotten, it was decided that the only way to arrive at a conclusion would be by actual test. Therefore five different types of motors were put into actual service.

The first "set-up" was to have the chief plant electrician examine the motors thoroughly each week-end. The first examination showed three of the motors to be so badly clogged with lint that it was necessary to change the schedule and arrange to have these motors cleaned out daily in order to keep them in operation. One of the motors, designated as a "self-cleaning" type, that was performing satisfactorily was apparently as clear of lint at the end of the week as it was after twelve hours of operation. Electrical engineers who came to observe the tests were highly complimentary of the efficiency of this one motor.

The windings of the motor which was found so satisfactory are smoothly covered with a compound which does not permit lint to adhere. The fan blades are so designed that they throw off practically all of the lint that may come in contact with them. The design of the end-bells has been given particular consideration—not only with a view to permitting the fan operation to clean the motor windings of lint during operation, but also to permitting complete "blowing out" of the motor with compressed air when scheduled. It is possible to drop a handful of lint on this motor while it is in operation, and observe the fan clean out entirely the amount that happens to fall in the end-bells.

In addition to the effective self-cleaning of the motor, tests as to the efficiency, temperature rise, etc., were run continually on the three most competitive motors, all identical in size and operating identical machines. In addition to the effective cleaning, it was surprising to note that the original efficiency was higher in this particular motor, and that the original efficiency was maintained; whereas in the motors which were not so self-cleaning, the efficiency dropped, as would be expected with temperature increases.

As a result of the tests, 200 of these motors were installed in our Atlanta plant, ranging from 2 to 7½ hp.; the majority of them being installed on the floor driving spinning frames through V-belts. This installation was completed during the summer of 1930, and to date we have seen no evidence of deterioration in the coil-covering compound, and our test readings show the same efficiency as when the motors were first installed.

The self-cleaning feature of the motors has really exceeded our expectations. We have not had to remove the end-bells for any cleaning on any motor since the installation was made.

Microanalysis of Fibers

By Edward R. Schwarz
S.B., A.T.I.

Article XIII continued—"Don't Be Afraid of the Microscope" Series

In the concluding instalment of this series the author discusses the use of the microscope for fiber identification and grading, for studying fiber structure and properties, and for investigating the effect of moisture and heat on fibers. Professor Schwarz has revised and brought up to date the data which have appeared in TEXTILE WORLD and arrangements have been made with the McGraw-Hill Book Co. for the publication in book form of the entire series, together with additional information on the equipment for and use of polarized light in textile microscopy.

THE best scheme for fiber identification for a wide range of materials, is the comparison of the unknown sample with a series of known specimens. Longitudinal and cross-sectional mounts should be made of each representative type or grade of fiber. These slides, properly labeled, should be filed systematically for reference as occasion may require. The application of the camera lucida, projection equipment, the comparison ocular, and the numerous other micrometric accessories will be evident.

That this is becoming more apparent to many workers in this field is evidenced by the tentative report of the rayon sub-committee, of the American Association of Textile Chemists and Colorists dealing with rayon indentification (*American Dyestuff Reporter,* 1931, Vol. XX, No. 20., p. 662). To quote from the early portion of this report: "The following systematic scheme, when carried out in the given sequence, serves for the rapid identification of rayons. This method can be depended upon by an experienced analyst, particularly when used in conjunction with filament count and microscopical characteristics. For the inexperienced man we recommend the detailed method of rayon analysis, and a comparison of the unknown rayon with standard samples of known make.

"The standards should be as inclusive of the rayon field as possible and should be kept up to date. . . . A microscopic examination of rayon is very simple and can be successfully carried out by men previously unfamiliar with the use of the microscope after a few hour's practice. . . . Some analysts prefer the cross-sectonal method of rayon identification. Others use it as a confirmatory check of the lateral method. Of the many methods of preparing rayon cross-sectional mounts that are in general use today, we prefer the Schwarz sectioning plate (perforated slide) method. Other methods—for example, the cork method—will give equally good results in the hands of skilled operators."

Fiber Structure

There is no doubt that the microscopist must play an increasingly important part, not only in the compilation of the necessary data, but in its interpretation and use. Only by study of fiber structure can dimensional data be rationally recorded. In the case of bast fibers the "commercial fiber," so-called, is a most elusive thing. Its diameter and length depend upon the extent to which breakdown of structure has occurred and, therefore, how nearly it approaches the dimensions of the ultimate cell. Comparatively few fibers are circular in cross-section, and a diameter is quite useless without qualification or explanation. In the case of cotton, the long and short diameters of the fiber may be given, but the latter quantity should be the average of several measurements because of the prevalence of reniform sections. A much more important fact is probably the uniformity and thickness of the cell wall.

In Table II are tabulated data of value in the measurement of fiber length. The values in the first two columns (headed H and V)are the readings of the scales on the mechanical stage of the microscope in the horizontal and vertical directions respectively. The second two columns (headed ΔH and ΔV) are the differences between successive readings from the first two columns. The headings of the remaining columns are self explanatory and the last column contains computed values of the square roots of the sums of the squares of the values of columns three and four. When added we evidently have the total length of the fiber. This table gives actual data following the method as indicated in Art. VI, Figs. 3 and 9 (Oct. 26, 1929).

Grading Textiles

The whole question of the grading of fiber is founded upon microanalysis, either in whole or in part. Even the gravimetric method for determining fineness is made simpler by preparation of the sample under the stereoscopic microscope. Much has been accomplished in the grading of wool, and Dr. S. G. Barker, of England, in his splendid paper delivered at the Coming of Age celebration of the British Textile Institute, shows how

Table I. Tabulated data for measurement of fiber length as an aid to density determinations

H.	V.	ΔH	ΔV	$(\Delta H)^2$	$(\Delta V)^2$	$(\Delta H)^2+(\Delta V)^2$	$\sqrt{(\Delta H^2+(\Delta V)^2}$
53.1	91.1	...	...	....	....	....	....
53.4	91.4	0.3	0.3	0.09	0.09	0.18	0.43
52.7	91.5	0.7	0.1	0.49	0.01	0.50	0.71
52.5	91.7	0.2	0.2	0.04	0.04	0.08	0.29
52.1	91.5	0.4	0.2	0.16	0.04	0.20	0.45
51.7	91.8	0.4	0.3	0.16	0.09	0.25	0.50
51.2	92.1	0.5	0.7	0.25	0.49	0.74	0.86
50.8	91.9	0.4	0.2	0.16	0.04	0.20	0.45
50.4	92.3	0.4	0.6	0.16	0.36	0.52	0.72
49.9	92.5	0.5	0.2	0.25	0.04	0.29	0.66
49.6	92.4	0.3	0.1	0.09	0.01	0.10	0.31
49.4	92.6	0.2	0.2	0.04	0.04	0.08	0.28
49.2	92.9	0.2	0.3	0.04	0.09	0.13	0.36
Total.....							6.02 mm

the skilled wool sorter without recognizing it, grades wools by classes which, measurements show, are in geometric progression "The Measurement of Wool and Its Practical Significance," *Journal of the Textile Institute,* Vol. XXII, No. 5, p. 89, 1931. This should follow as a result of Fechner-Weber's law which states: "In order that the intensity of a sensation may increase in arithmetic progression, the stimulus must increase in geometrical progression." If science can, by the aid of the microscope and sensitive balance, check closely with a psychological phenomenon, there is much hope that the purely mechanical operations of drafting, spinning, etc., may eventually be correlated with the measurable characteristics of fibers, so that "quality" may be quantitatively defined.

Modern literature on the applications of textile microscopy includes many papers on measurable characteristics of fibers — particularly wool — and a great deal of effort and time has been expended in the development of new and improved techniques. For instance, J. I. Hardy, of the U. S. Department of Agriculture, has developed a technique for obtaining precise casts of the surface of wool fiber and hairs, which can be studied microscopically with great satisfaction and convenience. The details of the method are to be published shortly, and should be effective in speeding up work of research on the felting of fibers.

Not only should normal and unprocessed fibers be studied, but the abnormalities found in fiber and the results of manufacturing and use should be investigated. Several workers have been concerned with the question of the formation of kemps in animal fibers, and have been interested, not only in their detection, but also in their cause and structure.

Detection of Defects

Another field is the deterioration of fibers by micro-organisms—either fungus growths or bacteria. Increasing attention is being paid to the bio-chemistry of textiles, and one of the biologist's most powerful weapons in the attack on this problem is the microscope.

Mechanical damage to fibers has been hard to record quantitatively, but the selective staining action of Congo Red on the inner structure of the cotton fiber and of diazo-benzene-sulphonic acid for similar work with wool (Burgess & Rimington, *Journal of the Royal Microscopical Society,* 1929; pp. 341-348) have been productive of encouraging results.

Fig. 7. Disintegration of wool fiber to show the structure and the ultimate cortical cells (action of hydrochloric acid and pressure)

Fig. 8. Structure of mohair kemp (cross-section)

General observations of damage resulting from faulty processing or use can be found scattered through the literature. An excellent example is the work by Summers on "Common Faults in Cotton Goods" which is illustrated by some 29 photomicrographs (*Journal of the Textile Institute,* 1925; p.T330).

Harrison studied the effects of stresses in fibers by placing them between a glass plate and a grooved celluloid film placed on a second glass plate, the whole having been mounted in the microscope (*Royal Society Proceedings,* Vol. 94). Examination was by polarized light between crossed nicols. It was shown that cotton fiber offered greater resistance to deformation than did wool, and the return to normal or nearly normal after the removal of pressure was small for wool. The effects on silk, flax, and ramie showed that these fibers were permanently deformed, and that they retained internal stresses, but that the effect was not so great as for wool.

Moisture and Heat

Further studies showed the effects of moisture and heat, the conclusion was as follows: "In the dry state textile fibers exhibit a kind of plasticity, in which strains produced by externally applied stresses are accompanied by corresponding internal stresses; both strains and internal stresses disappearing when the fibers are placed in cold water. The effect of heat on dry fibers up to the temperature of 100° C., is not to alter the nature of this plasticity; it may, however, alter its magnitude, but this has not been investigated.

"Water at the ordinary temperature removes this plasticity, and causes the fibers to become elastic; they are deformed by stress but return to their original shape on removal of that stress, unless the elastic limit has been passed. The elastic limit appears to be higher for wool than for other fibers. At high temperatures water renders fibers truly plastic, externally applied stress produces deformation, but little or no internal stresses. Cotton retains some of the internal stresses, but wool appears not to do so.

". . . The modifications in the condition of internal stress produced on wool fibers by boiling in water are similar to those produced on cotton fibers by treatment with concentrated solutions of alkalis. Cold water, although it removes internal stresses formed by the action of externally applied stress, has no effect on the naturally occurring internal stresses, which must therefore differ from the former kind.

"The same difference has been observed with artificial fibers, and is undoubtedly due to the fact that the stresses present in the formed fibers are due to changes in volume, whereas externally applied stress produces only changes in shape."

It will readily be seen that such microscopic investigations point out the possibilities of correlating optical and physical tests, and also the important fact that the use of such aids as polarized light goes far toward furnishing much valuable data on the ultimate structure and properties of textile fibers.

Preston points out in discussing the use of the microscope in the textile industry that the phenomenon of fluorescence has most often been studied on large specimens (fibers in bulk), and that little work has been done on the microscopic analysis (*Textile Manufacturer,* November, 1930). The present author believes that undoubtedly a serious drawback to the development of research in fluorescence microscopy for textiles has been the expense of the special equipment involved. This necessitates illumination by means of an iron arc lamp which provides ultra-violet light, and the use of filters to eliminate visible rays from the beam. A special Corex glass is used for the specimen slides and a special eyepiece cap filter should be used. A complete set of accessories to convert a normal stand into a fluorescence microscope will cost over $200. Mildew may sometimes be made apparent which could not otherwise be detected. Rayons of different types give different colors when they fluoresce. Nopitsch states that cellulose fibers appear yellowish and protein (animal) fibers appear bluish. ("Ultra-violet light in Chemical Textile Research," *Melliand's Textilberichte,* Vol. 9, pp. 136-138, 241 & 330, 1928; "Identification of Rayons by Ultra-Violet Light," *Kunstseide,* Vol. 10, pp. 321-324, 1928.) Viscose rayon appears distinctly yellow, while cellulose acetate is distinctly violet-blue. Since other methods of micro-identification are simpler and less expensive, the interest in fluorescent phenomena is largely academic.

Fig. 9. Cotton and wool fibers after swelling—a, ordinary lights; b, elliptically polarized light

Fig. 10. Cross-sections of flax, cotton, wool, silk, and ramie—Schwarz metal-plate method

Fig. 11. Cross-sections of viscose, acetate, cuprammonium, and nitrate yarns—Schwarz metal-plate method

Three Classes of Fiber

The ultra-microscope which employs ultra-violet light as illumination, but in which the fluorescent effect is absent, gives opportunity to obtain greater resolution of fine detail than could otherwise result. It is not easy to determine when the specimen is in focus—or rather, which of several adjustments is the right one. Alois Herzog ("Die Mikroskopische Untersuchung der Seide und der Kunstseide," Springer, Berlin, 1924; "Mikroskopische und Mechanisch - Technische, Textiluntersuchungen, 3rd edition, Berlin, 1931), gives a brief outline of certain applications of the instrument and divides fibers into three classes: those fibers showing only faintly visible mesh structure (gelatin rayon); those showing plain and distinct mesh marking (cotton and rayon); and finally, those showing distinct parallel markings (silk, flax, and hemp).

In this article the author has not attempted to describe or to illustrate the microscopical characteristics of the usual textile fibers. To do so would require a treatise in itself, and since much important information is still to be obtained authoritatively, such a compilation would be incomplete.

Neither is this article an exhaustive review of the literature. To make it such would require that it be extended to the proportions of a small encyclopedia. Rather it is intended to show that microscopy is not new in textiles, that the range of investigational endeavor has been wide; and that emphasis has been placed on both practical manufacturing research and the work in pure science.

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Article I, "Possibilities of Microscope in Textile Industry," April 27, 1929; Article II, "Types of Microscope Applicable to Textile Industry," May 18; Article III, "Handling the Microscope with Efficiency and Understanding," June 22 and June 29; Article IV, "Methods of Illumination," Aug. 17; Article V, "Useful Accessory Equipment," Sept. 21; Article VI, "Textile Micrometry," Oct. 26; Article VII, "Mounting Textile Specimens," Dec. 14 and Dec. 21, 1929; Article VIII, "Preparing Cross-Sections of Textiles," Jan. 18 and Feb. 15, 1930; Article IX, "Recording Data," May 24 and May 31; Article X, "Photomicrographic Apparatus," Aug. 16 and Aug. 23; Article XI, "Photomicrographic Technique," Dec. 20, 1930, Jan. 24 and Feb. 28, 1931; Article XII, "Microanalysis of Yarns," April 18, May 23, and June 27; "Microanalysis of Fabrics," July 25 and Aug. 29; Article XIII, "Microanalysis of Fibers," Jan. 9, 1932.

Overseers' Round-Table

THIS department offers a new subject for discussion each week and gives readers' comments on problems introduced during previous weeks. The subject which was opened five weeks ago is closed this week and summary of contributed ideas given on opposite page.

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Repairs in the Mill

Editor, Overseers' Round-Table:

IN THE struggle for existence in these days of trade depression, it is only natural that a man's first thoughts are of self preservation. An old saying says, "second thoughts are best," and to-day it is vital that we should think twice.

When a mill is to be overhauled and painted, the unemployed men of the company will almost instinctively think that they should do that work, although they may have little or no experience in that line.

I feel sure they would see this in a different light if they would think of the circumstances reversed. Supposing some unemployed painters wanted clothes, and said "we are unemployed, so why should we not do the weaving ourselves, instead of letting weavers do it?" It is easy to picture the chaos and muddle that would ensue, for both time, money and materials would be wasted.

But if the painting of the mill is done by men who have devoted all their lives to that work, the work is done efficiently and at a resonable price. They are employed and now give thought to clothes. Their shopping stimulates the salesman, and he orders more textile goods from the mill. More textile workers are employed.

Every man should be in his own calling. Trying to do another craftsman's work reminds me of a book published when I was a boy called "Everyman His Own Doctor." I well remember the remark by Dr. Talmadge at the time, who said a better name would have been, "Everyman his own funeral undertaker!" A. C. L., England

Editor, Overseers' Round-Table:

IN REGARD to repairs on the mill and in the plant I would like to say that if there was any repair work to be done in my room, or in any room, regarding machinery, it should be left to the overseer of the department to see that the work was done in the cheapest way. If the mill was shut down the overseer should give the work to the help in his department. If he didn't the help would drift from the mill to another and when it came time for the mill to start up it would mean new help. New help always means more work for the other fellow and in many cases more seconds.

I believe it should be left to the overseer of each room to decide when machinery repairs should be made, and by whom the work should be done. C. J. S.

Editor, Overseers' Round-Table:

I BELIEVE that repair jobs and painting could be done satisfactorily during slack period by the regular mill help. When certain workers were started on one job, however. I would keep them on it until the job was finished, and thus be assurred of a decent job being done. If various gangs were employed on one job the work would be very inconsistant.

I would show no favoritism, but would pick the help most suitable for each job and arrange to have all the help so

Avoiding Accidents in

"NO ONE likes to have accidents happen," said Superintendent Chase as the meeting opened, "and we all want to do everything we can to prevent them. Consequently, I'm going to ask you men to give your opinions on what should be done in this mill to cut down the number of accidents. I particularly want to hear whether you think it best to depend on signs and that sort of thing or make rules that everyone has to obey."

"I have known," said Pete, "a lot of mills that have been very active in putting up posters around the plant, holding safety meetings and all that type of effort, and I admit that they have been able to cut down accidents by these means. However, I think the only real way is to make rules and see that everyone obeys them. Just for example let us take a spinning room. Everyone knows that bobbins lying around the floor have caused many accidents, many of them much more serious than you would think. Now you can put up a big sign in the middle of the room saying 'Bobbins on the Floor Cause Accidents' and you will probably get pretty good results, but there are always some careless employees and there are always some accidents. On the other hand, if you put up a sign saying 'You are Liable to Dismissal for Leaving Bobbins on the Floor' you can bet your sweet life that no one will dare be careless. Handling sulphuric acid in the dyehouse, which often leads to trouble because workers get careless, is another example, but perhaps the best illustration of what I means is where a worker runs an abrasive wheel. He is supposed to wear goggles to protect his eyes, but, despite all of the signs and posters in the world, he is liable to leave them off on a hot day. The only way to protect that worker from his own foolishness is to say that you will fire anyone not wearing goggles. You simply have to *make* some people play safe."

"In the first place," Bill replied, "I don't like

ents in the Mill

Pete's attitude. I don't like this buisness of telling the worker that if he doesn't look after himself he will get fired. I'm naturally as much in favor of reducing accidents as anyone, but I think that the proper method is through education. Most accidents are caused by people who don't realize what they are doing and the only way to handle the problem is to make it plain that certain things cause accidents. I believe in educational posters, occasional talks to the workers, pictures showing accidents caused by the carelessness of someone, meetings of the overseers to discuss accident problems and all that sort of thing, but I certainly do not believe in any such harsh rules as Pete talks about. After all, you aren't going to help yourself in the estimation of the workers if you treat them as if they didn't know enough to come in when it rains. Give the workers credit for having enough sense to avoid accidents once you have pointed out the dangers and don't treat them like a lot of saps who have to be led around by the hand."

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What do *you* believe is the best way to approach the problem of accident prevention?

Overseers and others are invited to discuss this and other questions brought up in the super's talks. Letters accepted and published will be paid for without regard to length. Brevity is desirable.

employed, with all getting the same time as nearly as possible. In regard to quality, the help would do their level best in order to avoid any future criticism from their fellow workers. Of course, if painting was the only job to be done it would be feasible to divide the work, so many from each room. F. A.

Editor, Overseers' Round-Table:

Supt. Chase put a real live problem before his overseers when he asked them to present their views as to the advisability of doing repairs and improvements with their own or outside help.

From a strictly commercial point of view, I would state quite frankly that doing the majority of maintenance and improvement jobs with regular mill help, who have little or no experience, has never proved successful. One has to admit that on such jobs as painting where the mill employs one or more full time painters who can supervise and work with the regular mill help, it might be possible to break even on the job. However, the quality of the work is never up to standard. To substantiate this statement, I quote the following from my own experience:

One mill where I was employed had a number of overseers who were of the opinion that most of their jobs could be done as well and cheaper by utilizing their own mill help in preference to the regular engineering department help, which included mechanics, carpenters, painters, etc. In order to settle this dispute in as amicable a fashion as possible, I had the pleasure of checking up and reporting on the various jobs done by both departments.

While it was possible to obtain the exact cost of the work done through the regular channels, it was almost impossible to obtain anything like an accurate cost of the work done by the production department with their regular help. On the check-up I was able to decide by the quality of the work, whether it was done by the engineering department or the production people. My final analysis proved 95% correct, in-as-much as it showed all jobs graded A, No. 1, were done by the engineering department.

In conclusion, I would state that on a number of small jobs, the cost would be prohibitive if one tried to employ all of the necessary craftsmen; however, for quantity and quality on the larger jobs, let's all employ our hard hit craftsmen. "Interested."

Editor, Overseers' Round-Table:

From previous experience, I believe that the question of repairs depends entirely on the type of work, final cost, and the attitude of the management towards employees.

Under normal conditions most organizations have their own mechanics or outside experts to maintain buildings or equipment. Strange to say, as business falls off, these men—except for the key positions—are let go first.

A mill partially shut down affords an ideal opportunity for overhauling buildings and equipment. To do this requires experienced help or, especially in the highly skilled lines, costs will be exorbitant and results unsatisfactory. Therefore, unless management takes a paternalistic attitude toward its employees, it will be wiser and more economical to retain the mill's own small force of skilled service men and rotate such operatives as may be used on unskilled jobs as helpers. Ordinarily, most repairs handled by operatives during a period of depression have to be done over.

Z. E. S.

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Summary of Discussion On Repair Work

Opinion was about evenly divided on the question of having the regular mill operatives do necessary repair work, such as painting, during periods when business was slack. Those opposing the plan stated that the regular mill operatives were not experienced in such lines of work and that a far better and less expensive job could be done by experts. It was pointed out that employing mill operatives in this fashion really did nothing to help unemployment in the long run as it deprived the skilled repair men of work. Those favoring the plan expressed the opinion that it was a fine way to keep the organization together and that the workers would have enough pride to see that a good job was done.

Shrinkage Is Really "Stretchage," Says Better Fabrics Bureau

"THE truth about shrinkage is that it actually is *stretchage,*" states the Better Fabrics Testing Bureau in a recent issue of the Viscose Co.'s *Crown News.* An abstract of the Bureau's discussion follows:

"Any or all of the textile fibers can be conditioned for manufacture into clothing so that the finished product will not change its size more than a fraction of a per cent from orginal measurements. Yet it is said in the market every day, that 'this shirt may shrink a little when laundered,' or 'don't let your cleaner wash this dress, etc.'

"The fact is that practically no care is being exercised in the trade now to safeguard the ultimate consumer by taking the stretch out of fabrics before manufacturing them into clothing. The condition with regard to the practice of stretching cloth is so bad in many branches of the industry that it has become accepted as a standard.

"The shrinkage of textile goods is a condition of manufacture of both cloth and clothing as old as the industry itself, but it has become a trade problem in recent years because the retail buyer failed to retain this specification in his purchase order to sources of supply.

"Shrinkage as a technical problem will always be with the industry as long as textile fibres stretch, but the practice of deliberately stretching textile fabrics can be curtailed and practically stamped out in many lines of mechandise by the retail buyer. If buyers would place orders on the condition of consumer shrunk goods, and specify that launderable merchandise must be laundry-shrunk and dry cleanable merchandise must actually be cleanable by standard cleaning processes shrinkage would soon lose its rank as number one of consumer complaints on textiles.

"Textile fibers possess elastic properties; therefore it is expected that any textile fabric will change its physical dimensions every time it is laundered, cleaned, and pressed. However, the changes in physical measurements will be slight (not more than 2%) unless the cloth was stretched by the finisher prior to manufacture into clothing.

"Arbitrary tolerances for shrinkage are stated below covering several types of fabrics and kinds of apparel:

	Allowance of Shrinkage
Crepe fabric dresses	5%
Plain woven fabric dresses	3%
Shirts	2%
Woven fabric underwear	3%
Knitted fabric underwer	6%
Lining fabrics	2%
Woven coat fabrics	1%
Bed sheets	3%
Blankets	5%
Table linen	4%
Towels	5%

"A worthwhile precaution to exercise in stretching a garment back to size measurements if it has shrunk in laundering or cleaning is to pull the fabric while it is wet. Textile yarns give up their elastic properties in a wet state; therefore, stretch the goods while wet and press with a heated iron. The pressing operation will have the effect of setting a normal amount of stretch in the cloth and the gain will be retained until the cloth is wet again."

▸ Research Studies Under Way at N. C. State College

Several research projects which are occupying the attention of teachers and graduate students at the Textile School of the North Carolina State College, Raleigh, were recently announced by

Joseph Lucks introduces a higher than waist-line bolero jacket and dinner gown of Durene Irish crochet in coque de roche.

Assistant Professor T. R. Hart. The projects include: the effects of spindle speed on the spinning value of yarn; the effect of some dry-cleaning reagents on the tensile strength of artificial fibers; the effect of storing and ageing cotton on the spinning qualities and breaking strength of yarns; the sulphonation and saponification of tallow and paraffin in the manufacture of softening and conditioning agents for the dyeing and finishing industries; a comparison of the various types of long-draft spinning with regular methods; the effect of yarn twist on rib-knit fabrics; suitable fabric constructions for hooked-rug foundations and various types of bags.

▸ Silk Employment In March Off 9.6%

A decrease of 9.6% in employment in the silk industry during March, 1932, as compared with the previous month is reported by the Silk Association of America, Inc. March employment was 20.5% lower than the same month of last year. Broad silk loom employment decreased 12.7%, narrow silk loom employment increased 6.1% and spinning spindle employment decreased 5.5% as compared with February, 1932. Machinery operations during March decreased 18.1% for broad looms, increased 5.8% for narrow looms and decreased 10% for spinning spindle activity as compared with the previous month.

▸ Program Completed For A.C.M.A. Meeting

Dr. Melvin T. Copeland, of the Harvard School of Business, Cambridge, Mass., will deliver one of the principal addresses on the subject, "Marketing and Distribution of Textiles," at the annual convention of the American Cotton Manufacturers Association, in Atlanta, Ga., May 20-21. The annual presidential address will be delivered by Cason J. Callaway, of LaGrange, Ga., Friday morning. The afternoon program will consist of a round-table discussion on the subject of fibers competing with cotton and will be featured by several short talks by members of the association. George A. Sloan, president of The Cotton-Textile Institute, and Governor Richard Russell, of Georgia, will speak at the annual banquet Friday evening. Various committee reports and the election of officers for the 1932-33 term will take up most of the business session Saturday morning.

▸ March Rayon Imports

The Bureau of foreign and Domestic Commerce, Washington, has reported on imports of rayon and other synthetic textile fibers into the United States during March, 1932, as follows:

	Pounds	Dollars
Yarns		
France	3,358	3,981
Germany	15,328	10,197
Italy	741	534
	19,427	14,712
Waste		
Germany	7,263	2,688
Cut or Staple Fiber		
Germany	55,719	14,983
Netherlands	500	184
	56,219	15,167

▸ Steady Rise in Domestic Wool Production

The accompanying table shows the revised estimates of total wool shorn by States, average weight per fleece, and total number of sheep shorn, for the years 1929, 1930 and 1931; also estimates of total wool pulled at pulleries for the same years. Figures show a steady gain in wool production until 1931 reached a point 62% above the low point of recent years in 1922. In January, 1932, revised estimates of sheep on

farms Jan. 1 were prepared, these revisions being based upon a study of the 1930 census enumeration and other indications. For most States these revisions covered only the years 1925 to 1931, but in a few States revisions of the figures from 1920 to 1924 were also made. Since the estimates of wool shorn are based largely upon the estimated number of sheep on farms Jan. 1, it seemed desirable to prepare revised estimates of wool shorn for the whole period 1920 to 1931. The revisions in the United States total of wool shorn for the years 1920 to 1928 are also shown at the bottom of the accompanying table together with the estimated amount of wool pulled for the same years.

WOOL PRODUCTION 1929, 1930 AND 1931
REVISED FEBRUARY, 1932

State	Production 1929	1930	1931
	Thousand Pounds		
Maine	470	471	491
New Hampshire	109	113	107
Vermont	264	255	252
Massachusetts	59	66	59
Rhode Island	12	12	12
Connecticut	40	46	51
New York	3,096	3 110	3,008
New Jersey	37	37	43
Pennsylvania	2,982	3,108	3,248
North Atlantic	7,069	7,218	7,271
Ohio	14,661	15,066	15,453
Indiana	4,500	4,752	4,980
Illinois	4,514	4,815	4,797
Michigan	8,480	8 400	8,526
Wisconsin	2,888	3,225	3,102
Minnesota	5,372	6,115	6,435
Iowa	6,800	7,640	7,920
Missouri	6,699	6,865	7,304
North Dakota	5,287	6,264	7,012
South Dakota	7,003	7,794	8,820
Nebraska	2,685	3,000	2,786
Kansas	3,172	3,365	3,243
North Central	72,061	77,301	80,378
Delaware	19	19	24
Maryland	561	580	552
Virginia	2,105	2,200	2,225
West Virginia	2,798	2,844	3,021
North Carolina	408	376	394
South Carolina	52	52	52
Georgia	116	112	112
Florida	124	114	111
South Atlantic	6,183	6,297	6,491
Kentucky	3,901	4,175	4,080
Tennessee	1,344	1,423	1,531
Alabama	184	160	143
Mississippi	274	274	274
Arkansas	190	181	198
Louisiana	418	425	443
Oklahoma	886	1,034	1,170
Texas	46,779	48,262	53,360
South Central	53,976	55,934	62,199
Montana	31,122	34,034	35,948
Idaho	18,156	18,156	19,419
Wyoming	26,502	29,702	34,560
Colorado	12,269	13,446	13,541
New Mexico	15,230	16,870	16,632
Arizona	5,820	5,640	5,766
Utah	20,655	24,440	23,050
Nevada	7,777	7,944	8,720
Washington	5,485	6,175	6,336
Oregon	19,531	21,375	22,000
California	25,730	26,989	28,004
Western	188,277	204,771	213,976
United States	327,566	351,521	369,315
Pulled wool	54,500	61,900	66,100
Ave. wt. per fleece, lb.	7.8	7.9	8.0
No. sheep shorn (thousands)	41,948	44,433	46,401

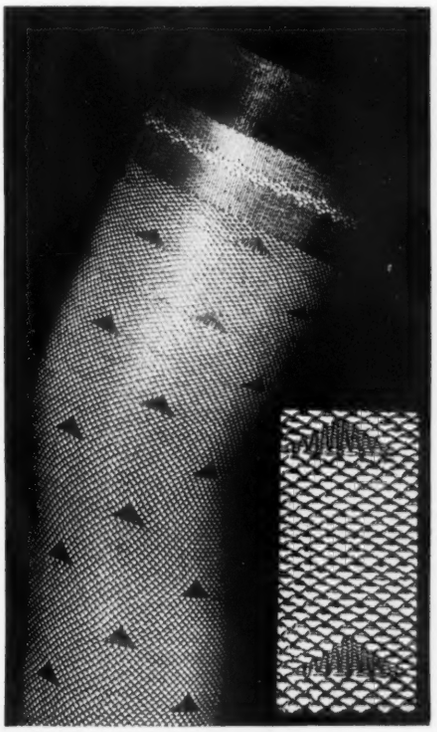
Revised Estimates for United States (1,000 lb.)

	Shorn	Pulled
1920	250,617	42,900
1921	241,465	48,500
1922	228,109	42,000
1923	229,895	42,500
1924	237,131	43,800
1925	252,832	46,800
1926	268,900	49,600
1927	289,909	50,100
1928	314,588	51,900

Philadelphia Upholstery Trade Gets Wage Concession as Part of Labor Pact

AN AGREEMENT has been reached by the Philadelphia Upholstery Manufacturers' Association, with the Upholstery Weavers' Union No. 25, and the Loom Fixers' Union regarding employment conditions in that city. The agreement involves a wage reduction averaging 15%, with a sliding scale of wages designed to compensate men whose hours of work are limited. There is also a provision for unemployment insurance which is to be financed by both the workers and the employers.

The plan is a result of the survey directed by the Department of Research



Lace pattern developed in mesh hosiery by Chas. Chipman's Sons, Inc., called "Points d'Esprits." Insert shows close-up of construction.

of the University of Penna. As a result of this agreement Philadelphia manufacturers feel that the reduction in production costs will be in a better position to compete with mills located in lower wage sections and specializing on low priced fabrics.

The sliding scale will be based upon the size of the order of "run" upon which the weavers are working, with a basic wage slightly below the present scale. The basic wage will be paid on average runs or ordinary size, while on long runs insuring steady work, there will be a reduction of 15%. On short runs, the workers will receive a bonus amounting to about 15% above the basic rate in order to provide a fairer income under such uncertain conditions of employment.

Loom fixers, who ordinarily oversee about 30 looms, are to be given a bonus amounting to 1% of the wages of the weavers. Provision is also made that on certain fabrics weavers may tend two looms for which they will receive 1⅝ times the basic wage.

The unemployment insurance fund to be established is to be provided jointly by the manufacturers who will contribute 2% of the weavers' wages, and the weavers themselves contributing 1%.

The agreement is dated as of March 1, 1932, and will be effective until March 1, 1933. John W. Snowden, president, Stead & Miller Co., chairman of the Manufacturers' Committee in the negotiations, which have been in progress since Jan. 5, expressed the opinion that more manufacturers will become identified with the group as a result of this agreement. The union officials have taken a firm position with regard to those manufacturers not participating in the agreement, that their members will not be permitted to accept the reduced wage scale without the other provisions included in the agreement.

▸ Organon Optimistic on Rayon Outlook

The rayon industry was sluggish during April due to the normally slower season and partly due to the extreme low level of the textile industry as a whole and the weaving trades in particular, says the *Textile Organon*, published by the Tubize Chatillon Corp. The southern weaving mills were the only ones showing any signs of normal life, business in the knitting field being slow in general.

"The reinstatement of the price guarantee on viscose yarns as of April 7," says the publication, was "the crowning evidence on the part of producers that they meant business when they said the price structure was going to remain stable." The publication adds:

"There is every reason to believe that the rayon business for the next few months will be much better than it would have been if the guarantee had not been reinstated."

▸ Committee on Unemployment and Relief for Chemists Now Functioning

Organization of the committee on unemployment and relief for chemists and chemical engineers, sponsored by the chemical and allied societies of the New York metropolitan area, has been completed and the committee is now operating in the attempt to find work and assistance for the unemployed members of the profession living in this area. There are no charges of any kind for this service. The office is at 50 East 41st St., New York.

NEWS about MEN

Charles Cheney, chairman of the board of directors of Cheney Bros., New York, and South Manchester, Conn., will appear in the new issue of "An Outline of Careers," edited by Edward L. Bernays, public relations counsel, and published by Doubleday, Doran & Co. Mr. Cheney's estimate of a career in the textile industry is given in his chapter, for which he is particularly qualified, since he has devoted his entire life to the industry. He attended M.I.T. and has studied abroad both in schools and in mills. He has been connected with Cheney Bros. in every capacity from manual worker to superintendent, president, and now chairman.

Lucien Lepoutre, of France, is visiting his brother **Jacques Lepoutre,** president of Verdun Mfg. Co., Woonsocket, R. I. The Lepoutres control the Lafayette Worsted Co. in Woonsocket as well as the former company.

Col. F. Vernon Willey (Lord Barnby), head of Francis Willey & Co., Bradford, England, arrived in this country last week aboard the "Berengaria." He will spend some time at his American branches, Barre Wool Combing Co., Ltd., Nornay Worsted Co., and Francis Willey & Co., Ltd., South Barre, Mass.

Capt. Elliott White Springs, of Fort Mill, S. C., president of the Fort Mill Mfg. Co., and mills at Lancaster, Kershaw, and Chester, S. C., was recently elected a member of the board of directors of the Hunter Mfg. & Commission Co., New York.

William C. Bitting, president, Liberty Dye Works, Inc., Reading, Pa., has been elected a delegate to the Republican national convention. Mr. Bitting is also president of Rosedale (Pa.) Knitting Co.

Edward K. Cone has been appointed chairman of the nominating committee, by the board of governors of the Wool Top Exchange, to present candidates for all offices, to be filled at the annual election in June. **William J. Jung, William Wieck, Frank H. Wiggin,** and **Thomas F. Cahill** are on the committee.

B. G. Slaughter, president of Tubize Chatillon Corp., New York, has returned from business trip to Europe.

Herbert W. Wilkinson, formerly with Southbridge (Mass.) Finishing Co., has been appointed superintendent of the Imperial Printing & Finishing Co., Bellefont, R. I.

Donald Comer, who has been made executive manager, Hunter Mfg. & Commission Co., as reported last week

Joseph H. Shinn, with technical department of the American Bemberg Corp. for five years, has resigned. He was active in the development of the first Bemberg hosiery. Mr. Shinn was formerly with the U. S. Testing Co., the Tubize Artificial Silk Co., later merged with the present Tubize Chatillon Corp., and with the Industrial Rayon Co. His future plans have not been disclosed.

Thomas D. Palmer, superintendent for 28 years of the E. Richard Meinig Co., Reading, Pa., retired May 1. He was born in England in 1869, came to the U. S. in 1892, and worked for the Amsterdam (N. Y.) Silk Mills; he then spent six years at the Ticonderoga (N. Y.) Pulp and Paper Mills and later was associated with the Clark Textile Co., Sydney, N. Y.

Harry Meisel has resigned from the Spool Cotton Co., New York, to join the National Thread Co., Inc., New York, as a member of the firm. He has been in the thread business for 18 years, with the Spool Cotton Co. for seven.

Brown Mahon, recently resigned vice-president and assistant treasurer of Judson Mills, Greenville, S. C., has become affiliated with the sales promotion department of American Enka Corp., Enka, N. C. Mr. Mahon will make his headquarters in the New York office of the company.

John R. Jones, who recently resigned as secretary-treasurer of Sanford (N. C.) Cotton Mills, has been succeeded by **E. M. Underwood,** assistant secretary-treasurer. Mr. Jones still retains the presidency of High Falls (N. C.) Mfg. Co.

J. Ebert Butterworth, treasurer, H. W. Butterworth Sons Co., Philadelphia, was recently decorated with the Verdun Medal, by Henry Deloche, official correspondent of the Golden Book of Verdun. During the World War, Mr. Butterworth served as captain of Company F, 313th Infantry, and now holds a commission as lieutenant colonel of the 316th Infantry Reserve Regiment.

Herman Cone, treasurer of the Proximity Mfg. Co., Greensboro, N. C., was elected president of the Greensboro Rotary club at a recent meeting, effective July 1.

W. Robert Blum, of the United Piece Dye Works, Paterson, N. J., has been appointed a member of the board of directors of the Textile Color Card Association by Charles Pinnell, president of the association. Mr. Blum will represent the dyeing industry.

J. Frank Legg, head of Worcester (Mass.) Woolen Mills Co. for many years, will be manager of the New England plant of B. Cohen & Sons Co., Chicago, at Manchaug, Mass., new clip and old woolen rag dealers. Mr. Legg will also be available for consultation on manufacturing problems.

Major J. T. Crawford has resigned as general superintendent of Aragon-Baldwin Cotton Mills, operating plants at Chester, Rock Hill and Whitmire, S. C., effective June 1. The mill management has announced that no successor will be appointed to fill the position of general superintendent.

Textile Calendar

Phi Psi Annual Convention, Mayview Manor, Blowing Rock, N. C., May 13 to 15, 1932.

Second National Cotton Week, May 16 to 21, 1932.

American Cotton Manufacturers Association, annual convention, Atlanta-Biltmore Hotel, Atlanta, May 20 and 21, 1932.

National Association of Woolen and Worsted Overseers semi-annual meeting, Rocky Point, R. I., May 31, 1932.

Philadelphia Textile School, Commencement, Philadelphia, June 2; alumni outing and dinner, June 3, 1932.

Chicago Yarn Men's Circle, 11th annual golf tournament, Nippersink Lodge, Genoa City, Wis., June 22 and 23, 1932.

American Society for Testing Materials, annual meeting, Atlantic City, N. J., June 20 to 24, 1932.

Southern Textile Association 24th annual meeting, Hendersonville, N. C., June 24 and 25.

Southern Textile Exposition Textile Hall, Greensville, S. C., Oct. 17 to 22, 1932.

Southern Textile Association, regular fall meeting, Greenville, S. C., during week of Oct. 17, 1932 (exact date to be announced later.)

National Association of Cotton Manufacturers, Boston, Oct. 26 and 27, 1932.

W. **H. Willis,** director of Clemson College (S. C.) Textile School, has been appointed chairman of the sub-committee on mill research to foster solution of problems which involve changes in design or operation of mill equipment, succeeding Walter C. Taylor, secretary of the Southern Textile Association, who recently resigned that chairmanship.

Scott Eadie has resigned as head colorist at the Mohawk Carpet Mills, Amsterdam, N. Y. His future plans have not been made known.

Earl K. Cooley, with Lorraine Mfg. Co., Pawtucket, R. I., for the last seven years, has joined the Colwell Worsted Mills, Providence, to develop women's wear fabric department.

Major H. M. Schofield, New York, sales representative of River Mills, Inc., and the National Silk Co., has received orders from the War Department to report for active duty at the Philadelphia Q.M. Depot, May 1, for fifteen days' training. Major Schofield, then a Captain, was one of the first reserve officers to be called at the beginning of the World War, and was on duty as assistant to the Depot Quartermaster in the Woolens Division at Philadelphia. He later represented the Quartermaster Corps on the Clearance Committee of the War Industries Board in Washington, and was purchasing and contracting officer of the Supplies Division in New York.

Channing Hilliard, of A. W. Hilliard & Sons, Boston, has returned from a European tour with the Boston Olympic Hockey Team. They won 22 games, tied one and lost one.

S. M. Butler, office manager at the Excell Mfg. Co., Lincolnton, N. C., has resigned to accept a similar position with the C. A. Rudisill group of mills in Cherryville, N. C.

T. C. Stevenson, graduate of the Clemson College (S. C.) Textile School, recently resigned as assistant superintendent of Saratoga-Victory Mills, Guntersville, Ala., to become connected with Cannon Mills Co., Kannapolis, N. C.

L. A. Elmore, who was overseer of the card room in No. 2 mill, of the Rhodhiss (N. C.) Mills Company, Inc., has been promoted to the position of superintendent of both mills. **T. F. Woods** succeeds Mr. Elmore.

A. D. Truman, at one time with Salt's Textile Mfg. Co., Bridgeport, Conn., and at Collins & Aikman Corp., Philadelphia, has become overseer of dyeing at the Manhattan Print Works, Passaic, N. J.

J. E. Midgley, of Philadelphia, has succeeded **Harry Mosley** as overseer of worsted drawing at Amoskeag Mfg. Co., Manchester, N. H.

James L. Manning, formerly with Lymansville (R. I.) Co., has succeeded **Hugh Cameron** as overseer of dyeing at the Centredale (R. I.) Worsted Mills. **Joseph A. Deffley,** who was with him at Lymansville, is now his assistant.

William E. Spence has succeeded **Delmer Washburn** as overseer of spinning at Horner Bros. Woolen Mills, Eaton Rapids, Mich. **A. E. Patton** has been succeeded by **Andrew Tainsh** as overseer of dyeing.

James Farris, formerly overseer of spinning, Rhyne-Houser Mfg. Co., Cherryville, N. C., has been made superintendent of Wildan Mfg. Co., also of Cherryville, succeeding **D. M. Williams,** who recently resigned to become superintendent of Smithfield (N. C.) Mills, Inc.

W. E. Gantt recently accepted a position as overseer of the cloth room with Spencer Corp., Spindale, N. C. He was formerly with the Eastside Mfg. Co., Shelby, N. C.

W. T. Hodges, who was assistant overseer of the weaving department at Patterson Mills Co., Roanoke Rapids, N. C., has been promoted to overseer of the weaving division of mill No. 2 of the Roanoke Mills Co., at Roanoke Rapids. Both companies belong to the same interests.

Kay Cashion, formerly night overseer of weaving at Dunean Mills, Greenville, S. C., has accepted a position as overseer of weaving with Spencer Corp., Spindale, N. C., succeeding **W. B. Shannon,** who recently resigned.

H. B. Becknell, formerly with Ranlo Mfg. Co., Gastonia, N. C., has returned to Minnette Mills, Grover, N. C., as overseer of weaving on No. 2 shift.

Tom Biery has resigned as overseer of dyeing at Wuskanut Mills, Farnumsville, Mass.

W. L. Brown, formerly with Dunean Mills, Greenville, S. C., is now night overseer of weaving at the Spencer Corp., Spindale, N. C.

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Obituary

Everett H. Hinckley

Everett H. Hinckley, aged 62, who retired as vice-president of Borne Scrymser Co., New York, last November, after many years' service with that oil company, was killed last week in an automobile accident at Woodbury, Conn. He was the developer of the technique of spraying oil on raw cotton to facilitate the handling of the fiber in the preparatory processes. His son Herbert Hinckley, is president of Herbert Hinckley, Inc., Charlotte, N. C., makers of spraying equipment. Mrs. Hinckley, who was with him at the time of the accident, is in a Waterbury hospital with a fractured skull. They made their home in Mamaroneck, N. Y. Mr. Hinckley was at one time a member of the Chemists Club, United Fraternal Buyers Inn, and the Arkwright Club, New York.

Dr. Albert Putsch

Dr. Albert Putsch, aged 54, a member of the board of directors of J. P. Bemberg, A. G., died recently in Germany. Dr. Putsch controlled the technical management of the Bemberg plants. He was also a member of the board of control of the British Bemberg Ltd., and the American Bemberg Corp. He had lived some time in America and intended to return to the United States shortly.

Edward H. Crosby

Edward H. Crosby, aged 64, vice-president of Veeder-Root, Inc., manufacturers of automatic counting machines, died April 30 in Hartford following a short illness. Mr. Crosby started work as a tool maker and joined the Veeder-Root company the year it was organized in 1895 as the Veeder Mfg. Co. He eventually became superintendent and was instrumental with Curtis M. Veeder in the develoment of many inventions in counting and registering machines. When the Veeder Mfg. Co. merged with the Root Co. in 1928 Mr. Crosby became plant manager. In February, 1931, Mr. Crosby was elected vice-president and appointed consulting engineer. He was a member of the American Society of Mechanical Engineers. He is survived by his widow, two daughters and a son.

John L. Reinhard

John L. Reinhard, Macungie, Pa., died April 29 at the age of 83 years. He was a pioneer Pennsylvania hosiery manufacturer who for many years successfully operated the Valley Hosiery Mills, at Macungie. He retired some years ago.

George W. Frost

George W. Frost, aged 65, cotton broker, died recently in Montclair, N. J. He was a stockholder and director in the Phoenix Mills, Inc., Statesville, N. C.

Correction

In the report of the death of Howard Stockton in last week's issue, it was stated that one of his daughters surviving him is Mrs. A. D. Whiteside whose husband was former head of The Wool Institute. This was in error as Mr. Stockton's daughter married Alexander Whiteside, a prominent lawyer in Boston, who is not related to Arthur D. Whiteside of New York.

NEWS about MILLS

Cotton

Summerville (Ga.) Cotton Mills are operating full time and a good portion of the plant is operating at night.

Louisville (Ky.) Textiles, Inc., are running on full time production schedule, with regular working quota in practically all departments.

Naumkeag Steam Cotton Co., Pequot Mills, Salem, Mass., has inaugurated a four-day schedule, to be in effect at **Danvers Bleachery,** Peabody, Mass., as well. A 10% wage cut will follow the annual two weeks' vacation in July.

Clarke Thread Co., Newark, N. J., is installing 43 humidifying units purchased from Bahnson Co., Winston-Salem, N. C. John B. Clark is president of the company.

***Pearl Cotton Mills,** Durham, N. C., have filed notice of company dissolution under state laws. The plant was recently acquired by the **Erwin Cotton Mills Co.,** West Durham, N. C.

***Green River Mfg. Co.,** Tuxedo, N. C., has been bought by the State-Planters Bank & Trust Co., Richmond, Va., and the E. W. Montgomery Co., Greenville, S. C., for $40,000 at public auction, April 30. Included in the sale are 451 acres of land 80 acres in a valuable apple orchard, and the mill plant of brick construction with 8,416 ring spindles and 4,210 twister spindles.

Reading (Pa.) Towel Mfg. Co. is running on a full day time schedule, up to 9 p.m. at night in various departments.

National Weaving Co., Central Falls, R. I., recently organized to operate a local mill, will be headed by William C. Waring, Jr., and Edward T. Richards, both of Providence.

J. & P. Coats, Inc., Pawtucket, R. I., is installing 118 units of humidifying equipment, purchased through the New York office of Bahnson Co., of Winston-Salem, N. C.

Arcade Cotton Mills, Rock Hill, S. C., have adopted a curtailed production schedule until further notice, operating four full days each week. It is understood that the mill will shut down Thursday nights.

Wool

Haddam Woolen Co., Moodus, Conn., was damaged by fire April 26 and will be closed for at least a month. The chief damage was in the carding room where large carding machines, recently installed, were damaged. Some supplies and finished wool products were also lost. Total loss was estimated at $10,000. About 45 men will be thrown out of work.

Ohio Carpet Co. closed its mill in West Warren, Mass., April 29, for an indefinite period. Proposed federal taxes and other burdens upon industry are given as the reason by George M. Wallace, president, in a statement to stockholders and employees.

Marshall Spinning Co., Camden, N. J. Two-story woolen mill of this company was damaged by fire last week. The plant was closed recently. No announcement has been made regarding rebuilding.

Forstmann & Huffmann Co., Passaic, N. J., is having plans drawn for a new brick and steel boiler house at Garfield, N. J., reported to cost close to $25,000, with equipment.

Manayunk Plush Mfg. Co., Philadelphia. Trustee for creditors, appointed some weeks ago, has decided to liquidate the business. Machinery and equipment will be offered at a public sale in near future.

Whipple Mill, Burrillville, R. I. The final chapter of the mill village and plant is being written with decision to have buildings torn down.

Peace Dale (R. I.) Mills, M. T. Stevens & Sons Co., started on a 54-hour week last Monday, replacing a 48-hour week.

Oriental Textiles, Ltd., Oshawa, Ont., Canada. The creditors met recently in Toronto, and elected G. T. Clarkson, as trustee. They also elected John Slater, of J. Ambler & Sons, Harold Shapley and B. F. Griggs, as inspectors to represent the creditors. Total liabilities were shown at $591,471 and assets at $389,223.

Knit

Montgomery Knitting Mills, Summerville, Ga., are operating day and night.

Malone Knitting Co., Springfield, Mass., is adding a line of infants' face and bath towels, wash cloths, bibs and sleeping gowns to its established line of infants' shirts and bands. Samples have been produced and regular manufacture of the new line soon will be started. This firm is now packaging much of its output, using cellophane for the face and glassine for the back of the package.

Arnold Knitwear Corp., Cohoes, N. Y., recently organized with capital of $200,000, to operate a local mill, will be headed by C. Raymond North, 122 Mohawk St., and William A. Ryan, 270 Saratoga St., both Cohoes.

Flint Hosiery Co., Burlington, N. C., plans repairing portion of mill recently damaged by fire. An official estimate of loss has not been announced.

Edward Noon & Son, Philadelphia. Albert Gentel, Warner J. Steel and John J. Hosey have been appointed receivers in equity by the U. S. District Court.

Weber & Hunter, Inc., Philadelphia, Pa., have arranged for a change of company name to **Weber-Knit Hosiery Co.**

Glasgow Hosiery Corp., Reading, Pa., has purchased 16 Banner automatic hosiery machines.

Massachusetts Knitting Mills, Columbia, Tenn., are installing machinery for the manufacture of the new mesh hosiery.

Charles H. Bacon Co., Loudon, Tenn. Another carload of machinery is now being installed in the new full-fashioned mill of the company. V. W. Kirkland, formerly of Griffin, Ga., is superintendent of the new plant.

Silk

Schwarzenbach-Huber Co., Altoona, Pa. The weaving department is to be closed indefinitely. Employees, approximately 150, will be assimilated in other departments or sent on over to the Juniata, Pa., plant of the company. Throwing operations will be concentrated in Altoona.

American Silk Mills, Inc., Lancaster, Pa. An addition will be erected providing space for 100 additional looms.

Cumberland Silk Mills, Rockwood, Tenn., are negotiating with owners of their mill, occupied under lease, for construction of addition to plant, estimated to cost over $25,000.

***Manhattan Mills, Ltd.,** have awarded building contract for its Canadian branch plant at Granby, Que., to J. B. Langlois, Granby. The plant will be one story, cement and brick construction, 70 x 240 ft. The company which will manufacture rayon piece goods will move its entire plant from Taunton, Mass., to Granby, where 144 looms will be in production some time in June.

Finishing

Yates Bleachery Co., Flintstone, Ga., has purchased two carloads of machinery, now being installed.

Dedham Finishing Co., East Dedham, Mass. From auction sale of machinery and equipment recently held, about $13,000 was realized. Nearly 50% of machinery went to dealers and remainder to various mills.

**Indicates previous mention of project.*

Miscellaneous

Standard Mattress Mfg. Co., Pueblo, Col., is planning for repairs to two and three-story plant, to replace a recent fire loss. Work is estimated to cost close to $15,000.

Russell Mfg. Co., Middletown, Conn., is installing heavier and larger looms than have ever been used there before, for manufacture of wick material. New hydraulic machinery is also being installed for increased production of brake lining.

Astill Elastic Products Co., Norwalk, Conn., has been incorporated with a capital of $50,000. S. P. Astill, Sadie K. Nenger and William F. Tammany are the incorporators.

Derry Felt Mills, Inc., Chelsea, Mass., recently organized with capital of $50,000, to operate a mill in that vicinity, will be headed by Jacob Seidenberg, 60 Nichols St., Chelsea, treasurer, and Oscar Cutter, president.

Consolidated Wool Waste Co., Philadelphia, Pa. Mill of this company was damaged by fire recently. An official estimate of loss has not been announced.

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Business Literature

Aromatic Products. Givaudan-Delawanna, Inc., New York. Price list of aromatic products, conditions of sales, and description of products.

Bearings, Oilless. Spadone Machine Co., Inc., 15 Park Row, New York. A 15-page illustrated booklet describes how Metaline oilless bearings are made and points out that different types are made to fit all requirements.

Card Grinders. Saco-Lowell Shops, Boston, Mass. A parts catalog for both the drum and traverse grinders has been issued. Notes on the care and maintenance of these grinders are also provided.

Caustic Soda Liquid. The Columbia Alkali Corp., Empire State Building, New York. A 26-page booklet is devoted to answering the question of whether or not liquid caustic soda is more economical to use than that in the solid or flake form. A simple resumé of the necessary equipment and methods for handling the product, together with certain technical data that can be used by the engineering operating staff of the various plants is also included.

Chains and Sprockets. Chain Belt Co., Milwaukee, Wis. A catalog and engineering data book containing prices, weights, and information on the design and application of Rex roller chains, Rex block chains, Rex leaf chains, and Rex cut-tooth sprockets has recently been issued.

Chromium Platings. Chromium Corp. of America, 120 Broadway, New York. The advantages of Crodon-plating of industrial machinery and equipment as protection against wear and corrosion are outlined. In one place, it is pointed out, an investment of less than $100 in Crodon-plating a Schreiner roll permitted the plated roll to deliver more than 32 times the yardage obtainable from the same roll prior to plating.

Combing Machinery. Whitin Machine Works, Whitinsville, Mass. A new 60-page booklet describes and illustrates in detail the model D-3 comber, and the sliver and ribbon lap machines manufactured by this company. Production and draft tables are included.

Compressors. B. F. Sturtevant Co., Hyde Park, Boston, Mass. An 8-page catalog describes, illustrates, and provides specifications and performance curves for the Sturtevant design 9 centrifugal compressor.

Electric Motors. Century Electric Co., St. Louis, Mo. Pamphlet describes and illustrates various types of single-phase, 3-phase, and direct-current motors, motor generator sets, rotary converters, and other electrical equipment.

Electrical Equipment. Allen-Bradley Co., Milwaukee, Wis. New and revised bulletins and price sheets to bring the Allen-Bradley catalog up to date have recently been published. Among the new bulletins are those describing a.c. and d.c. drum reverse switches, multi-speed drum controllers, slip-ring drum speed regulators, and a.c. speed regulators. The revised bulletins concern the time limit d.c. automatic starters.

Electrical Research. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Interesting stories of Westinghouse research that have led to important developments in the electrical field are grouped together in a 48-page booklet. Illustrations provide additional interest.

Fans. Century Electric Co., St. Louis, Mo. Bulletin No. 42 illustrates and describes the various types of alternating and d.c. stationary, oscillating, ceiling, and ventilating fans of the Century type.

Fans, Convertible Multi-Vane. B. F. Sturtevant Co., Hyde Park, Boston, Mass. Mechanical features of the Sturtevant convertible multi-vane fans are outlined, and the various types are illustrated and their specifications given.

Glass-Lined Steel Equipment. Pfaudler Co., Rochester, N. Y. A new bulletin describes the various types of glass-lined mixers and storage tanks and gives their specifications and the particular applications for which they were designed. Some of the advantages of glass-lined equipment for the textile industry are listed.

Guider, Electric. The Textile-Finishing Machinery Co., Providence, R. I. A new electric cloth guider and feeder is illustrated and described in detail in a 16-page booklet. The several applications of this device are cited.

Industrial Chairs. Do-More Chair Co., Elkhart, Ind. The various types of office and factory chairs manufactured by this company are described and illustrated. Advantages of each type are listed.

Lattice Opener. Saco-Lowell Shops, Boston, Mass. A parts catalog for the No. 12 lattice opener manufactured by this company has recently been issued. In addition to illustrating and numbering all of the parts, it provides suggestions for operating and maintaining this machine.

Motors. Wagner Electric Corp., St. Louis, Mo. A new 22-page bulletin on squirrel-cage motors describing seven types and giving application tables, speed-torque curves, and complete constructional details has recently been issued. It is issued in loose-leaf form.

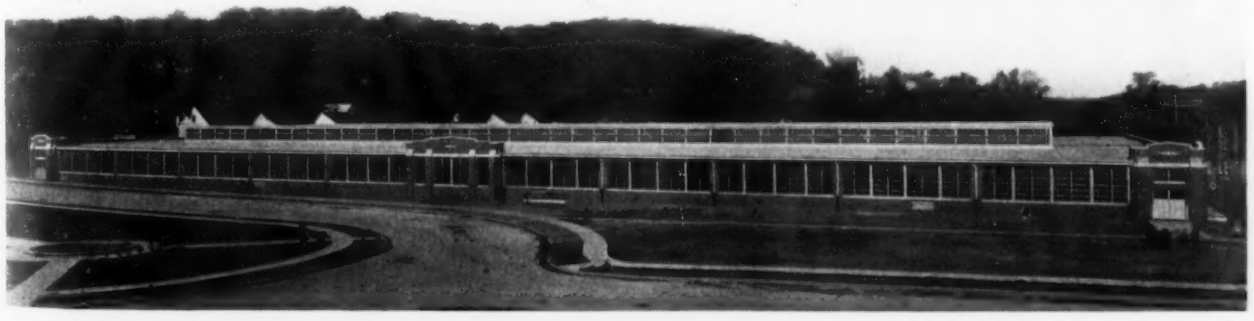
Nickel Alloy Steel Products. International Nickel Co., Inc., New York. A directory of manufacturers, fabricators, and distributors of nickel-alloy steel products, which takes the form of the 1932 buyer's guide, has been made available. This publication is designed as a convenient and reliable tabulation of sources of supply for nickel steels and special ferro-nickel alloys.

Pressure Indicator. Bacharach Industrial Instrument Co., Pittsburgh, Pa. The Maihak indicator, especially built for use on Diesel engines, is illustrated and described in a 5-page leaflet.

Silk Soaking. Quaker Chemical Products Corp., Conshohocken, Pa. Modern ideas on the theory and practice of silk soaking are discussed in a recent leaflet. The advantages of various products used in conjunction with silk soaking and manufactured by this company are outlined, and specific formulas for their application are given. Some of the subjects with which the treatise deals are softening the gum, soaking with soap and oil combination, soaking with prepared oil, water and its affect on soaking, mildew and how to prevent it, and softeners.

Slashers. Saco-Lowell Shops, Mass. A self-releasing device for gear-driven slashers, a device which reduces warp stretch and maintains yarn elasticity, is described and illustrated in a 4-page leaflet. In addition to this, two other devices are treated, namely, the automatic tension device and the adjustable press-roll arm.

Spinning Rings. Whitin Machine Works, Whitinsville, Mass. The mechanical features and operating advantages of Crys-steel rings for spinning and twisting cotton, wool, worsted, silk and rayon are discussed. Suggestions are given as to the installation and care of the rings, and one section is given over to describing and illustrating both steel plate and cast iron holders in which to mount the rings.



THE manufacture of canton flannel gloves has been started in a new building, 505 ft. in length by 230 ft. in width, recently completed for The Trion (Ga.) Co. The building was designed by and erected under the supervision of J. E. Sirrine & Co., Greenville, S. C. Exterior walls are of daylight construction to provide the maximum window space, while two longitudinal monitors with double runs of sash admit natural light for the interior of the building. All columns are cast iron, with floor and roof beams of steel. The rear wall of the building is entirely of frame construction to provide easy facility for future additions.

New Machinery *and* Processes

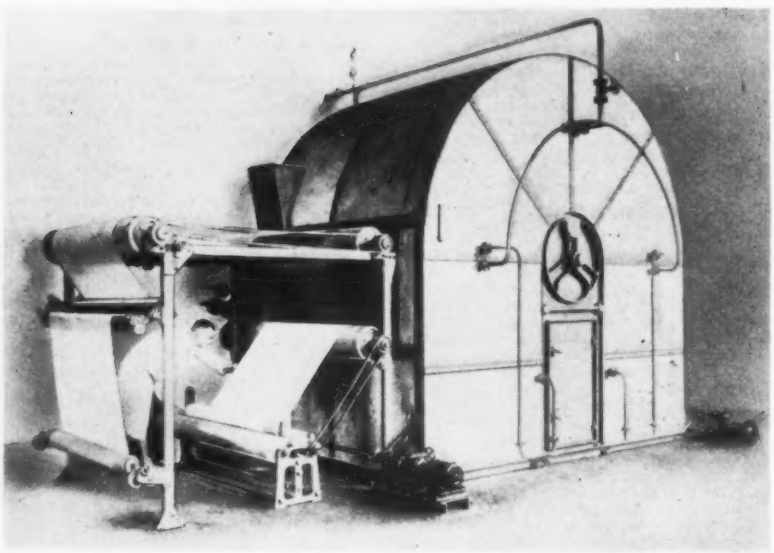


Fig. 2. Dryer with cloth feed and delivery at same end

Textile Dryers of Unique Design

*By Arnold Weisselberg, M. E.**

FOR the last few years, the Buettner Works, of Uerdingen-Nieder-rhein, Germany, has been engaged in the development of a new type of dryer, based upon a novel method of air circulation and manner of conveying the material, both protected by patents. The development has well passed the experimental stage and dryer installations of this type are now in operation in Germany, France, Italy, Belgium, Austria, and Czechoslovakia. Negotiations for the manufacture and sale of this type of dryer in this country are now under way.

The application of this new type of dryer to drying problems in the textile field has yielded some simple and interesting solutions as will be seen further on. Typical of all these dryers are the circular path of the material, the centrally located turbo fan with backward sloping vanes, and the special arrangement of the heating elements in relation to the fan and to the course of the material.

The part which scientific methods have played in the development of these dryers, appropriately named Turbo dryers, will become evident from the extent to which the fundamental principles of drying have been incorporated in their design. A brief review of these principles and elucidation of the factors by which the performance of a dryer may be judged, will be helpful in making this clear.

In the selection of a dryer, aside from financial consideration, the following factors must be considered: (1) the manner in which the material is handled in the dryer; (2) capacity; and (3) efficiency.

The term "capacity," as generally used, is very indefinite. It is sometimes expressed in yards of material per minute (assuming a standard width), in pounds of moisture evaporated per hour, or in some other way established by custom for the particular purpose for which it is used. Expressed one way or another, it tells nothing about the performance of a dryer unless it is accompanied by information about the material and its condition upon entering and leaving the dryer, as well as about the power consumption and thermal efficiency.

The production capacity is governed by two main factors: the holding capacity; i.e., the yardage of material accommodated within the dryer; and the drying time. For instance, if it takes a certain dryer 10 min. to dry a material from its initial moisture content to the desired regain, and the dryer holds 300 yd. of material, the drying rate is 30 yd. per min. The holding capacity for a particular dryer is fixed and therefore does not vary with conditions. However, in providing for holding capacity, consideration must be given to the limitations imposed by the nature of the material, the manner in which it should be moved, and the results to be obtained, as well as to the effect the arrangement will have upon the drying time.

There are certain fundamental principles which, if applied to a dryer, will result in a reduction of the drying time under any condition. They have been substantiated theoretically and verified by practice. They are: (1) turbulent air flow as obtained with transversal flow, (2) high air velocities, (3) counterflow principle, (4) large number

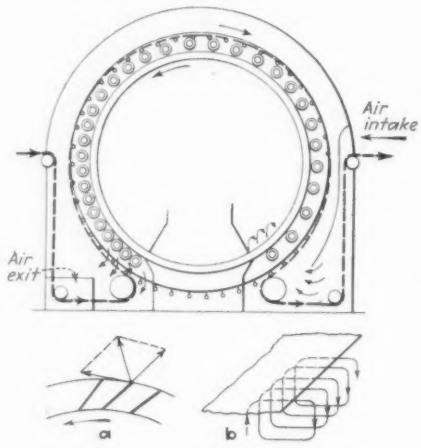


Fig. 1. Turbo dryer showing operating principles

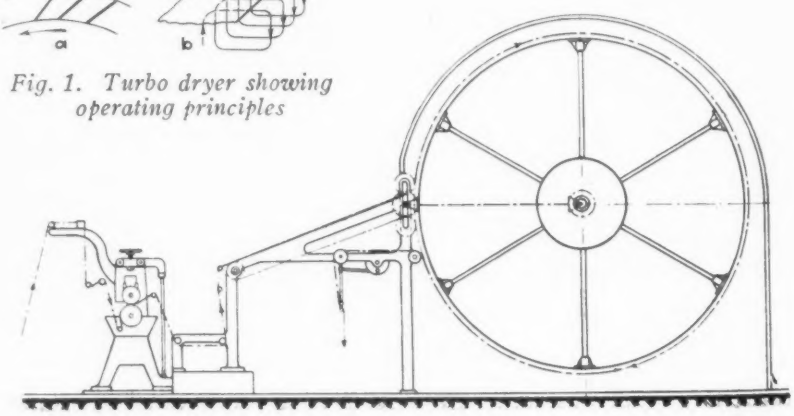


Fig. 3. Tenter dryer

*Consulting engineer

of graduated and balanced reheating cycles, and (5) high temperatures. In applying high air velocities, care must be exercised that the gain in production shall not be more than offset by the additional cost for increased power consumption and that the uniformity of drying shall not be impaired. The nature of the material will usually determine the maximum temperature that may be used without injury to the goods.

It is interesting to note that some of the fundamental principles mentioned in connection with the reduction of drying time will also improve the thermal efficiency. They are: (1) the counterflow principle, (2) large number of reheating cycles, and (3) high temperatures.

The thermal efficiency of a dryer is usually expressed in pounds of moisture removed per pound of steam used. It may more accurately be expressed as a percentage if a standard heat equivalent for evaporating 1 lb. of moisture be agreed upon. The writer has suggested 1,050 B.t.u., which is the latent heat of vaporization at 75° F. On this basis, 100% efficiency would represent the ideal condition were the moisture evaporated without any losses and without its temperature's being raised (assuming an initial temperature of 75° F.). The thermal efficiency too is a variable, dependent upon operating conditions which, therefore, must be taken into consideration when comparing efficiencies.

The economy of operation expressed in terms of capacity, power consumption, and heat consumption will be determined by the extent to which the abovementioned fundamental principles are incorporated in the design of a dryer.

How the turbo dryer embodies all these principles is best shown by reference to Fig. 1. As can readily be seen, the material moves in counterflow to the air. The blades of the turbo fan slope backward so that the absolute direction of the flow of air issuing from the fan blades (Fig. 1a) forms a smaller or larger angle with the radius according to the circumferential speed of the fan. After contact with the material, the air is again picked up by the fan, which it will now leave at a point more or less forward in the direction in which the fan rotates, depending upon the speed of the fan and the angle of the fan blades. The air is thus forced to take the course of a screw spiral around the circumference (See Fig. 1b). A change in fan speed will change the pitch of the spiral and so vary the amount of air moving through the dryer. Arranged around the circumference are heating elements past which the air travels in its spiral course through the dryer. Each of these heating elements represents a reheating cycle. The distance between the heating elements decreases toward the wet end of the dryer, where, because of the greater moisture content, it is necessary to reheat the air more often. Hence this type of dryer offers the advantages of a counterflow dryer with a large number of reheating cycles having as large a number of stages, as well as transversal flow which, as mentioned above, reduce the drying time and increase the efficiency. In addition, the circular path, as will be shown in connection with the description of the various styles, permits of a reduction of floor space for certain types of dryers, and of simple and ingenious solutions with respect to the method of conveying the material through the dryer.

The dryer shown in Fig. 1 is the standard design for drying cloth. The cloth passes over a tension device and spreader onto the conveying wheel. A guide roller, suspended in pendulum fashion, turns in ball bearings, thus preventing any undue tension being imposed on the cloth. On the drum the cloth is carried on rubber-covered pendulum-suspended bars; thus the points of contact between cloth and bars change continually, eliminating the possibility of over-drying at such points. These pendulum bars also compensate for the shrinkage of the cloth. This gentle method of conveying the cloth appears to be especially advantageous in the drying of sized material. A dryer of this type also is built with feed and delivery on the same end (Fig. 2). For very delicate materials which must be dried practically free from tension an arrangement is incorporated whereby the material is carried to and from the conveying wheel by means of short conveyors. Fig. 3 shows a tenter dryer. The cloth is tentered to the desired width on a short tentering frame, whence it is picked up by pins or clamps on the rims of the drying wheel, the distance between the rims being adjustable to accommodate the desired width. A design for the drying of printed goods is shown in Fig. 4.

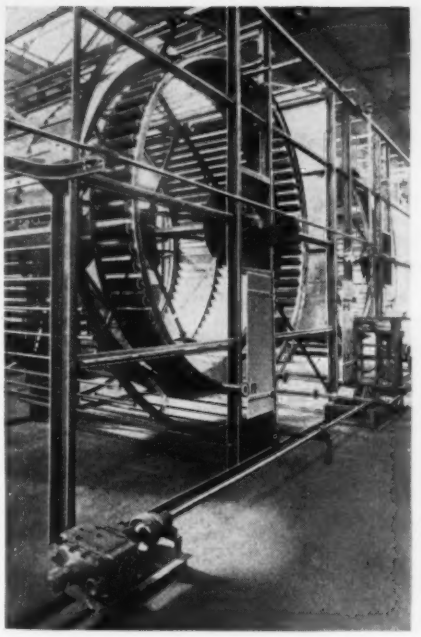


Fig. 6. Multi-cell dryer in course of erection

Increased output is obtained by an arrangement of two or more units in series as shown in Fig. 5. Fig. 6 shows such a multi-cell dryer in the course of erection. The wheel with the pendulum bars, the fan, and the heating elements may be plainly discerned. The fanwheels are standardized, and are 10, 12 and 14 ft. in diameter. The dryers are built single or double width. They take no more space than a loop dryer of the same capacity, and much less than a tenter dryer. The cloth moves through the dryer in perfect alignment, a feature of importance in the case of narrow goods, such as tubular fabrics, which may be dried in as many parallel lines as the wheel breadth can accommodate. The thermal efficiency of the dryer is high, consistently attaining

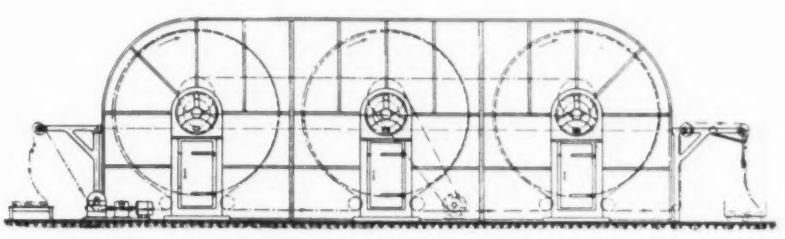


Fig. 5. Triple-cell dryer

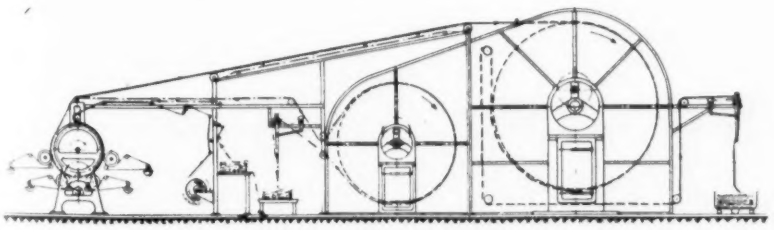


Fig. 4. Special dryer for printed fabrics

1.5 in terms of pounds of steam per pound of moisture removed. The power consumption is extremely low. For instance, a three-cell unit drying broadcloth weighing 4 yd. per lb. from 100% moisture to 6% regain at the rate of 60 yd. of cloth per min., calls for only 11½ hp. for both the fan and the conveying drive. This is due primarily to the method of air circulation and the large number of successive steps accomplished with a relatively small

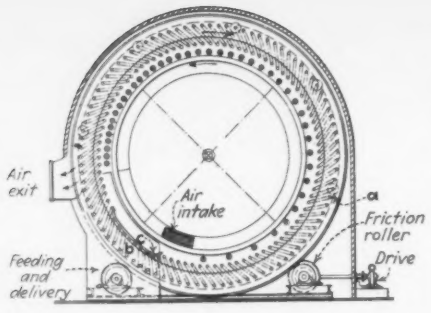


Fig. 7. Skein-drying equipment

number of large fans. Since the dryer has but a few moving parts, the attendance and the possibility of breakdown should be a minimum.

How advantageously this method lends itself to the solution of certain drying problems is demonstrated by the skein dryer shown in Fig. 7. The skein-carriage wheel consists of two annular disks on which, evenly spaced around the circle, there are mounted two sets of through-rods, over the ends of which, on either side of the wheel, are slipped the sticks holding the skeins. These sticks have oilless bearings, permitting them to turn freely. The rods of the inner circle are pivoted to the wheel and are forced away from their corresponding rods on the outer circle by adjustable springs, thus subjecting the skein to the tension required for best drying results. The skein sticks on the outer circle are provided with disks *a* which bear against stationary friction surfaces, causing the skein to revolve slowly when the wheel is in motion, thus preventing setting and over-drying at the point of support. Small cams, arranged in the path of the pivoted rods, compress the springs slightly only to release them suddenly, thus giving the skeins a snap which loosens and straightens out the fibers. The sticks holding the skeins are removed and inserted at the same point *b*, where a curved surface *c* forces the rods together, putting a slack in the skein to facilitate handling. Tension is applied gradually at a rate determined by the shape of the curved surface. The method of air circulation and the arrangement of the heating elements in relation to the fan and to the carriage wheel is the same as for the other dryers. The fan, however, is run at lower speed, to prevent strong air currents from entangling the skeins.

Another example is the spool or bobbin dryer, in which drying is accomplished by causing spool frames to revolve about their axes while moving through a vertical dryer. The turbo dryer is also especially suited to the drying or conditioning of sliver or yarn (especially sized yarn) because of the tensionless method of conveying the material through the dryer, and special models for this type of work have been evolved. Still another type has been developed for the drying and conditioning of fibers, linters, and other kinds of stock. Here the material is carried around the circle between a wire-cloth-faced drum and a wire-cloth belt.

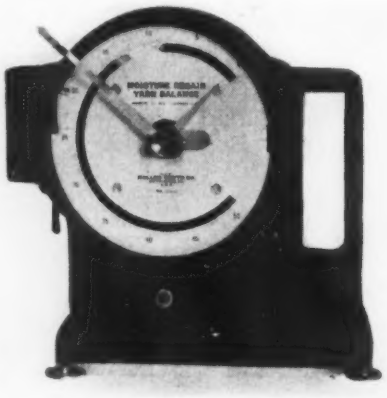
Precision Balances

DEVELOPMENT of a new line of precision balancers for quick and accurate weighing of textile test samples is announced by the Roller-Smith Co., 233 Broadway, New York.

Four general uses are cited: Making a fabric analysis, weighing yarn skeins, determining cloth weight per yard, and for use in connection with the wool staple diagram.

For determining moisture regain the balance can be supplied with an auxiliary movement contained in the same case but independent of the main movement. The auxiliary movement is calibrated so that it reads 0 when a weight of 100 mg. is on the hook. It reads directly any increase in this weight up to 20 mg. Therefore, a sample of the material being studied is made to weigh 100 mg. bone dry. It is hung on the auxiliary hook, and, when dry, indicates 0. It is pointed out that this sample will regain an amount of moisture equal to that of the test sample, provided both are exposed to the same atmospheric conditions for a long enough period. The reading of the auxiliary movement then indicates directly the percentage of moisture in the samples.

The weighing capacity of the instrument is said to cover a wide range, and the company has prepared a table showing the recommended ranges for various types of work.



Model B balance with regain auxilliary

Improved Recording Instrument

SEVERAL changes in its strip chart recording instruments, type CD., are announced by the General Electric Co., Schenectady, N. Y. The chart re-roll unit is now separate and spring driven, releasing the clock of all duty except keeping time. Either a Warren synchronous motor or a spring clock movement affording nine days' operation is provided at the option of the purchaser.

Indicating scales, standard equipment in addition to the charts, are removable and interchangeable. It is stated that the chart speed of portable types can be changed readily from inches per hour to inches per minute by means of a gear shift lever without removing the cover. Another lever is used for starting and stopping the clock. An automatic locking device prevents the re-roll spring from running down when the used paper roll is removed; and an automatic brake for the roll of supply paper balances the pull of the re-roll, prevents pulling the paper off the driving sprockets or overrunning the clock, and provides accurate time keeping.

Polyphase recording switchboard wattmeter

The type CD recording instruments are available for d.c. or a.c. operation, and for portable or either front- or back-connected switchboard mounting. The switchboard instruments can be mounted on 5½-in. centers.

Speed Regulators

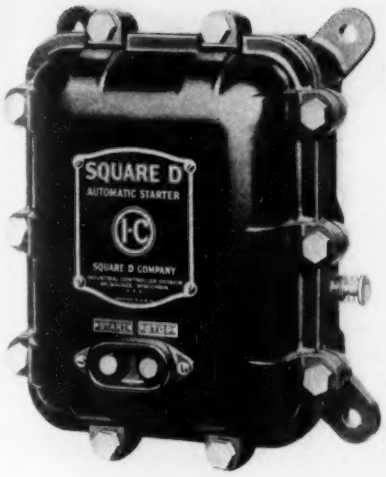
ANNOUNCEMENT is made by Allen-Bradley Co., Milwaukee, Wis., of the addition of a new line of a.c. speed regulators to their electrical controlling apparatus. They are designed for installation on slip-ring motors up to 25 hp. capacity and provide speed reduction of 50% for either machine-tool or fan duty.

Improvements have been made not only in the design of the contactor mechanism but also in the resistors. Several new features have been incorporated.

Explosion-Proof Starter and Control Station

EXPLOSION-PROOF starters, types AR-1 and BR-1, are announced by Industrial Controller Division of the Square D Co., Milwaukee, Wis.

The type AR-1 has a "start-stop" push button in the cover, while the type BR-1 is designed for remote control. The starter mechanism consists of a 3-pole magnetic contactor and thermal overload relay mounted on a porcelain



Automatic starter designed for use in hazardous locations

base. An explosion-proof cast-iron enclosure surrounds the starter mechanism. Both types have been approved by the Underwriters' Laboratory for use in class 1, group D locations.

A recently developed explosion-proof control station has also received approval. This explosion-proof control station is of three-wire, momentary contact type provided with one normally open and one normally closed contact enclosed in a cast-iron housing. It is designed to withstand an internal explosion without imparting injury to the enclosure and without transmitting flame to the surrounding gases.

Repulsion-Induction Motors

ANNOUNCEMENT is made by Wagner Electric Corp., St. Louis, Mo., of a new line of repulsion-induction motors known as type RG. They are designated as repulsion-induction motors because of the fact that the rotor, in addition to having a wire winding, also has a permanently short-circuited squirrel-cage winding.

The motor is said to be well adapted for severe starting duty and to have the advantages of low starting current, close speed regulation, positive operation on low voltage, high efficiency, high power factor, good commutation, and no internal short-circuiting or brush-lifting mechanism.

Type RG Motor showing four hinged covers on front end plates. Top covers are solid; lower covers are perforated.

Loom Let-Off Motion

ONE of the features of the new automatic silk loom manufactured by Crompton & Knowles Loom Works, Worcester, Mass., description of which has just been made available, is its let-off mechanism.

Because of the fact that friction has been found to be the basic cause of let-off failure, the new mechanism is designed so that tension and beam movements are entirely independent of any action of whip rolls, links, levers, gears, or ropes. The beam rests in self-aligning ball bearings, which are declared to allow the beam to let off the exact amount of warps required for each pick. A further refinement for heavy work is an oscillating dampener which prevents any extreme oscillation when harnesses lift.

The main assembly is entirely inclosed, packed in grease, and should not require further attention. Gearing is all cut-tooth; bearing surfaces are ground and held to micrometer dimensions; and essential parts are case-hardened to resist wear.

The motion is stated to be in full control from the front of the loom, and for ordinary pick-outs the weaver makes no trip to the rear. It is declared that no adjustment is needed during the weaving of a warp except taking off weights, and the setting of the let-off is not touched when changing from one quality to another.

In operation the motion is actuated every pick by means of a rod and lever drive from the lay sword.

In addition to the automatic let-off, a direct let-off which employs the same principles of operation as the former but which lacks some of its refinements in construction, has been developed.

The outstanding feature of both of these mechanisms lies in the fact that friction has been eliminated as a contributory factor to the amount of tension on the warp. This is done by eliminating the counter-weight and suspending a dead weight on the outside of the beam head. Tension on the warp, therefore, becomes dependent alone on the amount of weight suspended. The function of the let-off is to provide a mechanical means of preventing the weight from creeping up on the beam with the forward movement of the warp.

New Dyestuffs

The following products have been announced by General Dyestuff corporation, 230 Fifth Avenue, New York, distributors for I. G. Farbenindustrie Aktiengesellschaft, and by Carbic Color & Chemical Co., 451 Washington St., New York, distributors for Durand and Huguenin.

INDIGOSOL BRILLIANT PINK 13B, a stable vat preparation of very good solubility. On cotton, rayon, mixed fabrics, and other vegetable fabrics it yields clear bluish pink shades, ranging between those obtainable with Indigosol Pink IR extra and Indigosol Red Violet IRH, and possessing good fastness to light, very good fastness to washing and excellent fastness to chlorine. It is dyed on vegetable fibers by the nitrite-sulphuric acid process. Dyeings of very good all-round fastness are also obtained on unweighted and weighted silk. Indigosol Brilliant Pink I3B is suitable also for direct printing, padded, and padded-resist styles. This product is suitable for resist styles as it is readily dischargeable to a white with sodium thiosulphate, sodium acetate, or Rongalite CL in conjunction with sodium acetate, and in colors with vat and Rapidogen dyestuffs. It also may be used for colored resists, for instance under Aniline Black, Variamine Blue B, and vat dyeings, also for colored chlorate discharges. On wool it is dyed from a slightly acid bath and developed with bichrome and sulphuric acid in a fresh bath. Dyeings have excellent fastness to light, washing, and fulling.

INDIGOSOL GOLDEN YELLOW IRK, a homogeneous yellow Indigosol dyestuff which yields somewhat redder shades of even better fastness to light, washing and boiling than those obtainable with Indigosol Golden Yellow IGK. Indigosol Golden Yellow IRK is best printed or padded by the chlorate steaming process in the presence of sulphocyanide or oxalate of ammonia; the nitrite or bichromate process may also be used, but in that case equally satisfactory results are obtained only provided the printed or padded goods are given a short steaming before developing. The printing pastes and padding liquors are of good stability with all processes. The prints and pads obtained with Indigosol Golden Yellow IRK on cotton, rayon, and mixed fabrics of cotton-rayon or fabrics of other vegetable fibers are of very good fastness to light and boiling and of excellent fastness to chemicking. Indigosol Golden Yellow IRK is of interest for resist styles, as the pads are readily dischargeable to a white with sodium thiosulphate, sodium acetate, and Rongalite CL, and in colors with vat and Rapidogen dyestuffs. As is the case with Indigosol Golden Yellow IGK, the new brand may also be used for colored resists under Aniline Black, Variamine Blue B and vat dyeings, and for colored chlorate discharges. In cotton dyeing the new product is recommended primarily for the production of pale bright shades on mercerized piece-goods which are required to have excellent fastness to washing and chlorine, and very good fastness to light. On rayon, Indigosol Golden Yellow IRK dyes clear, reddish golden-yellow shades which in their fastness properties are about equal to those on cotton. Dyeings on unweighted silk have excellent fastness to light and very good fastness to washing. In mixed fabrics of cotton and viscose the fibers are dyed practically alike. On wool, Indigosol Golden Yellow IRK is dyed from a slightly acid bath, and developed with bichrome and sulphuric acid. The resultant dyeings are of very good fastness to light, washing, and fulling.

Questions . . . *and* Answers

Scouring Rayon-Cotton Satins Before Dyeing

Technical Editor:

I am enclosing a sample of cotton-rayon satin. I am having quite a lot of trouble in removing dirt from this fabric before dyeing. I have tried the following procedures in a Monel-metal-lined dye jig—the best vessel I have: (1) 2% to 3% soda ash; 4% olive oil soap; run for ½ hr. This treatment does not remove much dirt. (2)Caustic at 5° Tw., run ½ hr.; removes a lot but not all. (3) Caustic at 5° Tw.; run 20 min., rinse off, then run in perborate of soda at 2° Tw. for 10 min. This works fairly well, but makes the cloth crepy. I shall appreciate it if you will let me know the best way to scour this cloth before dyeing, also how can I give this cloth a full bleach when I want a dead white. (7843)

The goods represented by the small sample at hand appear to be stained by mineral oil acquired during the manufacturing, possibly in weaving. The warp is most affected, but does not seem badly stained. The difficulty in removing such stains by ordinary scouring processes lies in the extremely small metallic particles which blacken the oil stain. Also, the oil is mineral oil and does not emulsify readily, so that complete removal by alkalis is almost always impossible.

Since in your case the scouring must be done on the jig, taking a 500 yd. roll of the goods as an average batch, a better scouring effect may be produced as follows: Add to the bath about 5 lb. of a good textile soap, preferably a concentrated soap containing excess alkalis in the form of soda ash and trisodium phosphate. Boil this in a small quantity of the total liquor, cool to 100° F. with cold water, and add 2 qt. of carbon tetrachloride.

Run the goods for at least four ends in this liquor, keeping the temperature at about 120° F. Then turn on the steam and raise to the boil for four ends. Drop the bath and give two ends in hot water, say 180° F. An examination of the goods while running through this washing is advisable, as often they will be ready for dyeing most shades at this time, although perhaps not very light pinks, blues, or creams.

For the production of pure whites, additional treatment as follows may be necessary: After the scour, the goods are run for two ends at 180° F. in oxalic acid, about 5 lb. to the 500-yd. batch, and left on the beam for 1 hr. in the oxalic acid solution. They are then run two ends in hot water and given two ends in a hot solution of soda ash (2 lb. to the batch). After two ends of washing in hot water, followed by two ends in cold water, the goods are ready for bleaching.

Bleaching may be accomplished either with chemic or peroxide. Some dyers prefer peroxide; and the additional cost of the peroxide is somewhat compensated for by the time saved in washing and scouring the goods. Peroxide is most easily used in the form of hydrogen peroxide. To bleach the average roll, fill a large wooden pail holding about 30 lb. and add to the jig. Make up the liquor to the usual level and add enough sodium silicate to turn pink litmus paper just faintly blue. Care is needed here, or excess alkali will release the oxygen too fast for good results. Run the fabric eight ends at 150° F., and wash in running hot water for two ends. Then give a cold water treatment to cool the goods. A perfect white should result.

It is good practice to desize the fabric before any of the operations listed above are given. Four ends at 140° F. in a solution of 5 lb. of Diastafor (or the equivalent of another diastatic compound) to the regular amount of jig liquor will aid materially in preparing the goods for the scouring treatment. The soap, alkali, and carbon tetachloride may be added to this bath, provided it has cooled down enough so the solvent will not evaporate too rapidly.

Variations of this general scouring method may include the use of other solvents and the addition of soda ash to the scour so as to build up the soap even further. Also various soluble oils containing solvents may be employed.

▼

Difficulty With Nib Yarn

Technical Editor:

We are enclosing herewith nib decoration yarn made from rayon adding a pure silk nib. You will notice that the decoration nib is too well carded and is not showing up lumpy enough in the yarn, and we are submitting this to you to find out whether or not we are carding it properly or whether it was the fault of the nib being too small to begin with.

In order to card the rayon it is necessary to set it quite close on the card, and when we previously made a good decoration, giving a nib contrasting color, we used the same process as employed on this piece (that is adding about 3% to the mix before entering the card). We would like you to advise us as to whether or not, in this instance, we will have to add the nib on the finisher or use a larger nib. (7844)

It appears that the cards have been set close to get the desired carding results—a procedure which seems necessary on the class of stock in question.

The question states that only 3% nibs were used, and this seems to be a very small percentage. When allowance is made for loss in carding, the percentage remaining in the yarn would be very small.

It seems advisable to use a nib machine on the finisher card. This machine should be placed so that the nibs will enter the card just behind the last two workers. These two workers can then be set either open or close according to requirements, and the other workers can be set close to give the necessary amount of carding to the stock.

▼

Horizontal Bands in Full-Fashioned Hose

Technical Editor:

We enclose a full-fashioned stocking on which you will find horizontal bands or stripes. This stocking is made from regular seven-thread tram silk and was knit on 42-gauge machines. The silk was backwound over an emulsion onto bottle bobbins and was allowed to stand in a conditioning room for about 6 hr. before knitting.

We have found that this condition occurs in silk from all parts of the bobbin. We should appreciate your ideas as to the cause of these stripes and how we may remedy them. (7829)

We have examined the full-fashioned stocking in which horizontal bands appear in the leg. The fabric is uniformly constructed so that the knitting cannot be at fault. You stated that the silk is being backwound over an emulsion, but

do not say what the emulsion contains.

It is possible that the emulsion is at fault, but it is more likely that it is not being uniformly applied. If insufficient emulsion is applied to soften the gum on the silk, uniform work cannot be expected. It is our opinion that the bright bands are caused by poor conditioning. If the emulsion has been properly applied in back winding, we see no reason for adding additional moisture in a conditioning room. Storage of the backwound silk for a short period in an inclosed place to prevent evaporation should be sufficient.

We recommend that more of the emulsion be applied to insure complete penetration. Atmospheric conditioning should have as its object only the prevention of evaporation, as it is impossible to add moisture uniformly through atmospheric means to a package as large as that which you use.

▼

Rings in Stocking Knit from Bottle Bobbins

Technical Editor:

We are forwarding a sample of a stocking and should very much appreciate your comments regarding the rings shown therein. We have two types of winders which we shall designate as types A and B. The type-B bobbins are of a different shape from the others, and we sometimes have stockings which come through in the condition as indicated by the sample. We never have these rings when our silk is wound on type-A bobbins. Will you kindly tell us how we may avoid this defect on our B winders? (7847)

We assume that the silk is back wound wet by running over the emulsion rollers on both types of winders. We believe the narrow, dark rings are caused by heavy tension in delivering from the bobbin. The wet silk is allowed to dry on the exposed surface of the cone, which causes the drag on the delivery.

Because of the structure of the *B* wind, the silk is built one layer upon another from the base of the bobbin in a perpendicular position; and in the delivery, the reverse movement applies. The bobbin diminishes only one layer at a time toward the base. The outer surface of the cone is exposed for drying until the delivery reaches that section.

The *A* wind builds the cone one layer upon another with the cone in a horizontal position and with the traverse running the full length of the cone. In the delivery, the cone diminishes from the circumference toward the center the full length of the cone, and only the ends of the cone are exposed to long drying periods.

The suggestion we have to offer for the defect on the *B* delivery is to work out a soaking formula that will hold moisture longer, but one that will not soften the gum enough to make the threads stick together when dry. Then put less silk on the bobbin so it will be consumed in less time, and keep it in an efficient humidor to prevent all drying possible.

We believe that by putting only a few hours supply of silk on the bobbin for a run, the trouble can be eliminated. Another thought we have is that it is possible that the wood bobbin is too long for the amount of silk required, and the delivery from the lower end of the bobbin might drag in passing over the upper section of the bobbin. The straight upright section of the bobbin should be kept highly polished and the end well rounded.

▼

Chafe Marks in Rayon Knit Goods

Technical Editor:

Enclosed please find several yards of rayon knit goods made of 150-denier viscose yarn. Upon examination, you will observe numerous white or light gray coatings upon the surface of this fabric. We have 250 lb. of cloth like this and are at a loss as to what caused these surface spots as well as to what process we should resort to in order to remove them.

This material was all dyed in the same bath as follows: ½% sulphonated oil; 1% National Direct Brown GB; 15% common salt; run at 200° for 20 min.; rinsed 80° 20 min.; treat at 160° for 30 min. with 1% copper sulphate, 1% bichromate of potash; rinsed three times 80°. No finishing compound was used.

In order to detect these white spots it may be necessary to unroll and scan the surface as one would in looking for broken filaments. (7853)

The defect exhibited by the sample which you submitted is a particularly troublesome one. In the first place it is difficult to determine the source of the defect; and in the second place it is extremely difficult, if not impossible, to remove it.

It has been established that there is an indication of a slight surface chafing on the fabric. This, it appears, occurred in some process previous to the actual dyeing operation. The chafed spots thereupon act as a resist and develop the light gray coating you find on your fabric.

Due to the fact that there appears to be no method of removing the spots, we suggest that you strip the goods and redye with a very light shade. In light shades the chafe marks are not apparent.

▼

Sleaziness in Silk Hose

Technical Editor:

I am enclosing herewith a stocking which appears to have sleazy streaks, and also a sample of the silk from which it was knit. I should appreciate your advising me as to the cause of this trouble and how to overcome it. The silk is wound on cones and passes through electrically heated moistening boxes.

We have at times previously overcome most of this trouble by having the silk delivered on bobbins and by backwinding it ourselves over an emulsion on to bottle bobbins. Now that cones are being used again, we have run up against the same problem once more. (7842)

The sleazy streaks in the stocking submitted appear to have been caused by the uneven conditioning of the silk. The method you used when you previously overcame most of the trouble is good evidence of poor yarn conditioning.

We have always found that best results are obtained when the freshly wound yarn packages are allowed to stand in a moist atmosphere at least 24 hr. after they are wound in order that the silk may become uniformly saturated with the emulsion. When the silk thread or yarn is too dry, it does not bend closely about the needles and sinkers while the sinkers are drawing the courses. Therefore, the stitches are too long in all the streaks where the silk thread had insufficient moisture.

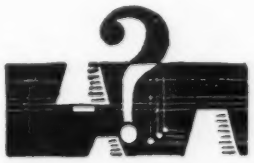
The maintenance of the correct amount of moisture is most vital in the manufacture of silk hosiery, since no subsequent processing will eliminate faulty stitch formation.

We find also that the sample stocking is faulty because the alternate courses have long and short stitches. The slur-cock or jack cam which draws the silk thread by means of the jack-driven sinkers is uneven or badly worn. More yarn is drawn when the slur cock is traveling in one direction than in the other. Although this is a mechanical error, it contributes in part to cause the sleazy streaks to look worse than they otherwise would.

We have found that some kinds of silk do not absorb moisture as readily as others; and also that it is very difficult at times to secure sufficient moisture penetration of the silk thread when the moistening is done mainly on the knitting machine.

The silk from which the stocking was manufactured was examined under a microscope and found to be of good quality.

Inquiries should give the fullest information possible; and if damaged materials is involved, a sample should be sent. We give no consideration to anonymous inquiries and do not undertake routine analysis of yarn or fabric, or investigation involving unusual expense.



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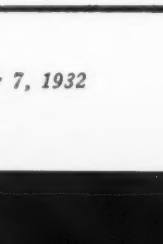

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TEXTILE WORLD ANALYST

New Uses Movement Helps Spun Silk in Lean Season

Development of new uses is the obvious solution when an industry suffers a sharp decline in demand from a major outlet, but this is not so easy as it sounds. Handicapped by research curtailment due to the depression, the spun silk industry faced a difficult problem in the waning call for shantung fabrics. Aggressive individual effort by spinners has brought their yarn into important new markets—an accomplishment meriting consideration by other divisions of the textile industry.

INCREASED merchandising emphasis and expansion of outlet markets have done much to redeem a conspicuously difficult season for the spun silk industry. It has been a lean period and, while the spinners are far from out of their troubles yet, the progress made is encouraging. The problems, and the attempts made for their solution, are illuminating as showing how an important division of the yarn industry is tackling the newest obstacles of the depression.

The spun silk mills suffered a big blow this year in the decline in demand for shantung fabrics. This line had been a leader for some years, supported by fashion's dictate and still feeling the stimulus of the work done by the Spun Silk Research Committee, shantungs continued to go nicely over the top last year; a wide range of pleasing goods was offered and well received. This market represented as much as 50% of the yarn sales of the major spinning firms. The season now waning, however, brought a big drop in all broadsilk activity, and shantungs were one of the major sufferers. Spring is normally the year's best period for spinners, but the last three months have been notably poor.

Some of the yarn firms are still hoping that shantungs may recover, in time for an active last-minute yarn call this season, though prospects along that line are not encouraging. The drop in shantung demand is attributed to the price emphasis and the poor quality of some of the goods offered during 1931.

Early this year, when it became evident that a tight season was due, spun silk mills strengthened their effort toward developing new markets. They were handicaped in this direction by the economy factor. General conditions necessitated a reduction in laboratory expenditures and in the amount spent for experimental work. As one executive expressed it: "This was not a set-back; it was just an intelligent concentration of activity; the aim was to make development work as compact as possible." However, inquiry revealed that the retrenchment was a good deal more drastic than this would indicate, and that the general tendency was to eliminate the bulk of specialized development activity and to use part of the organization proper for development work.

Despite the financial limitations, substantial progress was made. The most interesting achievement was the use of spun silk in men's athletic shirts. These garments were offered early in the spring and were favorably received by distributors, with the result that yarn sales to underwear knitters, while still only a modest part of the spinners' volume, increased substantially.

Spun silk also made its appearance in blankets this spring, being used as warp with wool filling. Here too it was accorded a favorable reception, but spinners did not profit so extensively because some of the wool goods mills did their own spinning. However, the industry is hopeful that further development of this market will eventually stimulate yarn movement.

Important progress has been made in novelty woven fabrics of spun silk content. The popularity of the rough surface proved beneficial in this direction; a fair range of these goods are now on the market, but the sluggish condition of broadsilks has delayed sales.

Development work being done by spinners may eventually prove more significant than is now evident, as numerous manufacturers—knitters, weavers and spinners alike—are keeping their operations a close secret. Several spun silk firms told of giving technical help to weavers, while yet being kept in ignorance themselves of the goods these firms are trying to create.

No less important than the new outlets is the development of established markets. Spun silk has gone over successfully in the knitted outerwear field this spring, and the prestige it is winning there may mean substantial gains next season. The vogue for mesh effects was followed in a wide range of sweaters, blouses and other outerwear, many of which have 100% spun silk content. The yarn has particular advantages here, spinners say; it is softer and rougher than reeled silk, both of which characteristics make it especially valuable in the sweater type garments. Spun silk yarns sold steadily to the knitted outerwear mills through spring, and spinners hope for further development of this market. Some knitters used spun silk and wool, which mixture is viewed as having perhaps greater possibility than the silk yarn alone.

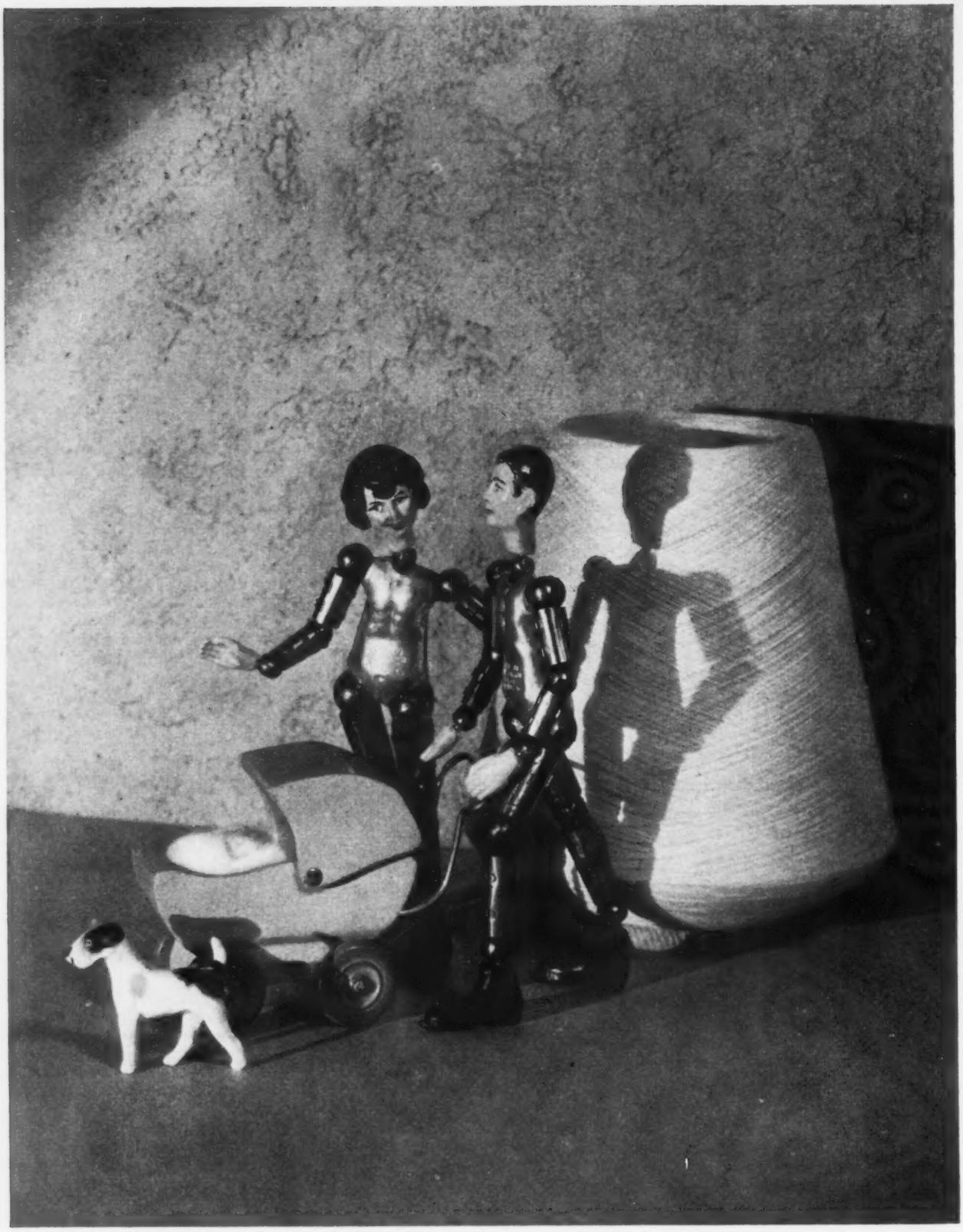
Sweater development may be the biggest feature of 1932 in the spun silk industry. These knitters increased their consumption of yarns considerably, and the volume did much to keep yarn mills operating through the lean days of the first quarter.

Some effort was made to use spun silk in knitted berets, but is proved impracticable; it was too soft, for one thing; and rayon has already been well established there. Rayon also hinders spun silk development in the pajama field —which is rather surprising since the rough surface of the natural fibre should be an important asset in this line. Yarn sales to the draperies industry have held their normal proportion, although rayon is also a problem here due to its low price. Tub silk fabrics have been a good market, but debasement of the goods during spring caused a slackening in demand for both the fabric and the yarn.

The stability of spun silk prices has been an important merchandising asset, especially in view of the increasing competition of the reeled yarn.

While refusing to make predictions as to what is ahead, silk spinners tend to place increasing reliance on the development of new markets; they are hopeful that their progress in this direction will help toward a rehabilitation of the industry.

The merchandising discussion which appears regularly on this page considers various branches of the textile industry from week to week. It analyzes significant marketing trends or developments in those branches. While it covers current movements, its conclusions concern potential future significance of those movements, rather than the effect of temporary fluctuations in trade sentiment.



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YARNS AND RAW MATERIALS

TEXTILE WORLD ANALYST

◆Cotton Yarns Feel Cotton Decline

FURTHER decline in the cotton market has not served as a stimulus to business in cotton yarns. It has caused buyers to hold off still longer to revise their price ideas, while at the same time some of the limited business under consideration has been delayed until the market finds itself. The price situation is naturally confused, and yarn quotations are decidedly nominal since there is not enough business being done to indicate a definite basis. Until the cotton decline developed, there were signs that a serious effort was being made to stabilize prices.

A number of merchants were not surprised to see cotton values go lower. This they felt was to be expected following the tendency in other raw materials. April was generally a poor month for yarn business, after rather a fair volume for the first quarter. With customer mills in the North curtailing their operations and reducing their calls for deliveries, because of slow business on their goods, the situation has been a critical one from more than one angle. Dealers point out that there is a good volume of orders on spinners' books which would permit them to operate their plants for several months, but the decline in specifications has made it impossible for spinners to run more than two or three days a week.

One of the most encouraging factors, regarded by the trade as a potential influence for business, is the depleted conditions of retailers' and distributers' stocks. Evidence is to be found on all sides that their purchases have been confined to absolute, immediate needs, and that there is no accumulation of finished goods to meet any development of buying. Dealers feel that it would be a real stimulus to business if yarn buyers would discontinue their efforts to hammer down yarn prices below production costs, and would at the same time refuse to sell their own products at a loss.

It is impossible to puote prices accurately with such a limited volume of trading now going on. A manufacturer offered to place a fair sized order for 20s-2 warps at 13c., but this was declined and 14c. was the lowest price acceptable. Scattered small business is noted in carded yarns for heavyweight underwear. On 10s framespun, 12 to 12½c. is reported.

Combed yarns are not active, and the little business being done would seem to be at prices rather below usual quotations. Many spinners, however, are not anxious to book much business at such prices. Specifications are still coming in from a broadly distributed trade. This same condition applies to mercerized yarns where some factors report substantial improvement. April was a poor month for these yarns, and new business is still limited. Base prices are holding fairly close to quotations.

◆Cotton Sags on New Crop Progress

UNCERTAINTY felt with reference to the future marketing policies of the Federal Farm Board was removed by an official announcement during the week. This stated that the Cotton Stabilization Corp., will be authorized by the Federal Farm Board to sell not to exceed 650,000 bales of its present holdings in the fiscal year beginning Aug. 1, 1932. This amount is approximately one-fifth of the total quantity of cotton now being withheld from sale by the Cotton Stabilization Corp. and the Cotton Cooperative Association.

This announcement made a generally favorable impression on sentiment in the trade in New York. There were some who pointed out that it would add just so much cotton to the supply available to buyers during the coming season, but the Farm Board holdings have always figured in the statistical position of the market, and the fact that the trade now knows what to expect with reference to their disposition so far as next season is concerned, leaves the market freer to respond to such other influences as may present themselves. The market's first reaction to the announcement of Tuesday was reflected in a moderate rally, following the declines of late last week and Monday, which carried the price of July contracts up from 5.45 to 5.80, or about 35 points from the low record, but buyers failed to follow up the advance aggressively, and prices sagged later on reports of favorable weather for new crop progress

(Continued on page 50)

Market Briefs

Cotton: Downward fluctuation; dull trading.
Cotton Yarns: Price pressure finds spinners disposed to shut down.
Cotton Goods: Scant trading in dull market.
Wool: Further recession but volume small.
Worsted Yarns: Nominal prices as buyers still wait.
Woolen Goods: Demand uncertain; shutdown urged.
Silk: Firmer tone; little buying.
Silk Yarns: Fair spun silk call; thrown yarns quiet.
Silk Goods: Cold weather slows sheers movement.
Rayon: Sales decline continues; may curtail further.
Knit Goods: Mesh full-fashioned hosiery prices soften; underwear improves, then weakens again; warm weather expected to bring rise in swimsuit prices.

◆Worsted Yarns Still Await Demand

WORSTED yarns continue to mark time with no appreciable change. Demand remains an almost unknown quantity, and little interest is shown even where extreme price concessions might be made. There is little opportunity to know the actual position of prices in the absence of volume business. While extreme figures are sometimes heard, salesmen declare they mean nothing in themselves. Frequently there is little reason even to believe them. Nevertheless, there are evidences that some weakness is still shown, but in the long run cut prices have little result in the way of sales. They are more likely to unsettle the mind of the buyer and weaken his confidence in values. In view of this, leading spinners continue their efforts to establish prices upon a firmer basis. In the face of existing conditions, one spinner asserted he might as well quote $1.00 as 50c., for all the business he could get. Furthermore, if he reduced his price on 2-40s to $1.00, he would not expect to make sales in any volume, if at all. For that reason, this spinner, together with representative mills, have been exerting every effort to instill a little common sense into the price situation. They are confident that a firm price position on both yarns and products will be a helpful factor in restoring confidence and consequently a better volume of business. As it is to-day, with demand falling off, spinners are finding their operating schedules seriously threatened.

This situation also confronts weaving mills, many of which are operating a minimum of their looms. While buying has not yet shown active development in volume, there are said to be signs of improvement in the near future. There is growing apprehension of congestion, with considerable business lost because of inability to get deliveries of fancy twists and mixes in time from those spinners who have curtailed operations. There have been recent efforts to secure lower prices on these yarns with the result that 2-30s 64s fancy mixes in Bradford yarns are noted at $1.17½ to $1.20, with French spun at $1.22½ to $1.25, although other spinners have not changed their quotations for these yarns.

Knitting yarns show little change. Conditions in this industry are apparently still moving along slowly. However, rather better activity is reported on medium-priced swim suits. Yarn specifications are coming in more freely, as deliveries of suits are being sought with the approach of warmer weather. Some manufacturers are grad-

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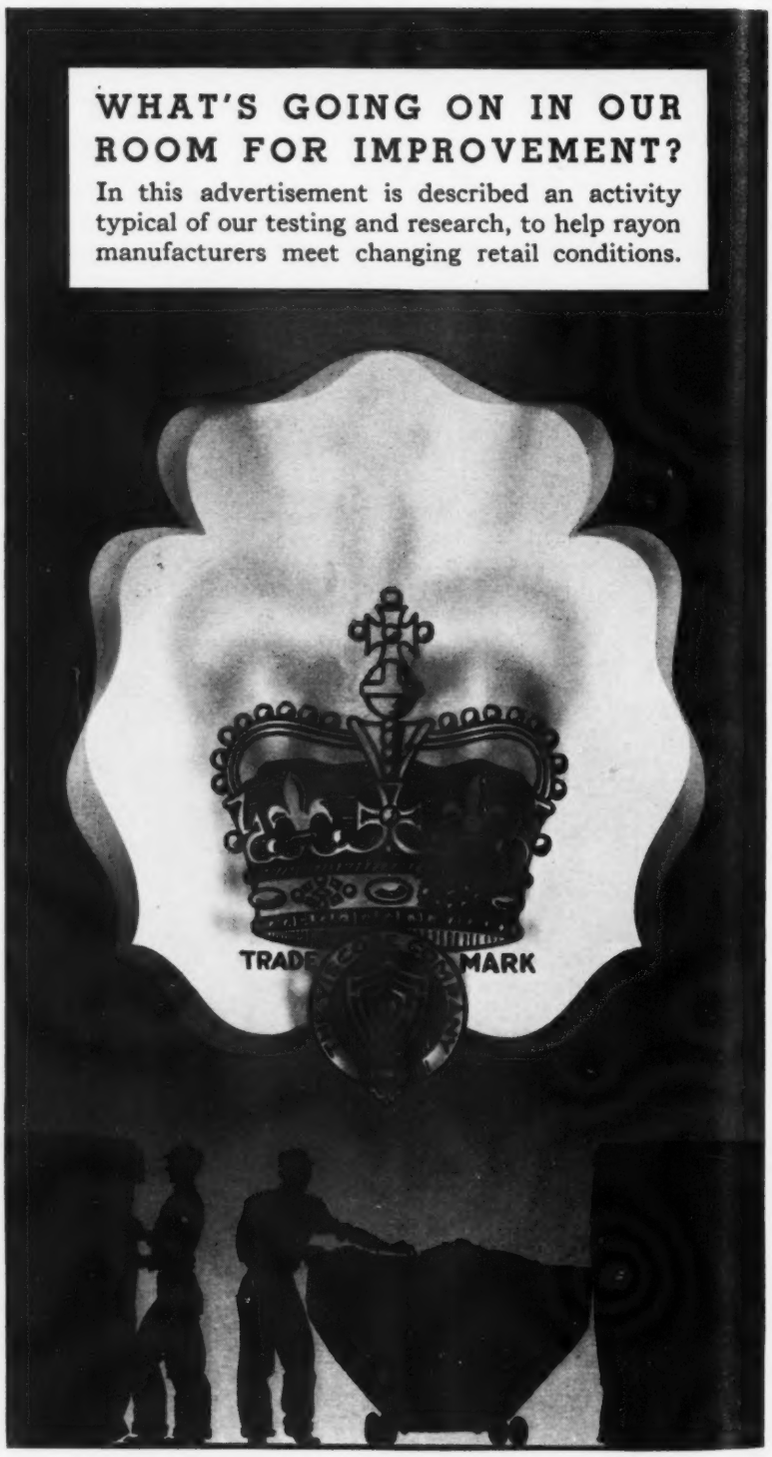
In this advertisement is described an activity typical of our testing and research, to help rayon manufacturers meet changing retail conditions.



CROWN RAYON YARN

ually increasing production, but apparently this is by no means general. Sweater business has not developed in any volume, despite efforts to get out what little light-weight business is yet uncompleted. Yarn prices continue unsettled with 2-20s still around 65 to 67½c., and single slub-dyed 18s generally 87½ to 90c.

◆Sag in Wool Values Still a Feature

PRICES on wool continue to show a downward trend brought about by almost complete dearth of mill buying. Dealers are letting the market take its course, showing no disposition either to force sales or to check by any artificial means the sagging price level. Long-continued dullness amounting to almost complete paralysis is believed to have reached its maximum and a slight increase in mill interest seen in the taking of small sample lots of the fine territory and fleece wools is considered encouraging as indicating some clearing up of the manufacturing situation. However, further curtailment of mill operations as well as the closing down during the week of important manufacturing units have tended to increase uncertainty as to the near future, and such events coinciding with unsettled conditions in the goods market, and an undetermined price basis in the country, are considered the chief causes of the almost complete standstill in wool operations.

Buying of spot territory wools has been exceedingly small. Strictly fine staple has been taken out of the market in sample lots as low as 48c. clean basis. This type of wool is in competition for the limited business available with delaine, which is in larger supply and available at a grease basis, that would bring the clean price to par with the fine territory. The general stagnancy is relieved somewhat by the appearance of a little interest in fleece wools and some offers have been made on Ohio delaine at a grease price that would indicate a quotation of 48 to 50c. for this wool clean basis. Small quantities of Ohio quarter-blood have been purchased for knitting purposes around 19 in the grease or approximately 32c. clean.

An unusually apathetic attitude is taken toward the new clip. In the western States it looks like a consignment year and yet unforeseen events may change this considerably. Some merchants think it probable that the pent-up demand for wools and goods may later break loose with considerable energy and force a re-survey and a new evaluation of the domestic wool position.

Interest in wool tops is at a low ebb. Fairly substantial quantities are held by the several combing establishments, but their stocks of greasy wools are about worked out. The price of fine tops when the market eventually opens up is unpredictable, but the quotation of 70 to 72c. for 64-66s is in line with wools.

◆Wool Noils Strong on Short Supply

MERINO noils occupy a strong position among the materials used by the woolen division. Wool prices are undoubtedly low and relative to these, low prices fine and half-blood noils are quite high; yet it is not possible in the majority of cases for mills to substitute wool for noils because these latter materials give a certain "feel" and appearance to the fabric that is not achieved by the use of wool alone. Fine noils at this time are approximately 90% of eight-months Texas wool and this is the high basis for the year.

Demand for reworked wools continues dull. Old rags are not moving in any larger volume and the call for clips is also quite restricted. Fine light merinos continue to receive some little attention from mills operating on automobile cloths and business in the aggregate has been sufficient to keep the price firm at 9c. or better.

Mill waste dealers are doing a little business and the slight price changes are considered indication of fair position for good wastes.

◆Rayon Lull Acute; Shutdown Considered

WITH rayon yarns sales showing a further decline, the question of more drastic curtailment of output occupied the attention of rayon producers this week. The producers hesitate to take immediate steps to reduce at production because of the possibility of a pick-up later on. Rayon flat crepes sell very slowly, and these weavers have cut down their yarn orders to a negligible point. Knitters also are curtailing; it is estimated the underwear mills are operatin gabout 60% of capacity.

Several important rayon companies ordered a revision of production schedules this week, bringing output down from 65% to 60% of capacity, but the industry as a whole averages 68 to 75%, or the same as last month. There is much talk in the industry as to whether plants should cut to 50% of capacity, or shut down altogether for part of the summer.

Some price weakness in 150 denier and 100 denier has marked current sales. Certain firms are reported to be selling the 150s and the 100s at 10 to 12c. below list price.

◆Silk Yarn Mills See Outlook Improved

THE advancing season has had a stimulating effect on sentiment in the silk yarn markets, but sales have not shown any appreciable change. Throwsters and spinners lean to the belief that, in view of the elimination of seasons the buying usually done in spring may be carried over into the summer period. Thrown yarns sell lightly to hosiery manufacturers, and some throwsters report fair buying, all for nearby delivery. Broadsilk manufacturers have curtailed so drastically that they have little need for thrown yarn; the orders they place are of the day-by-day variety, with very little of that.

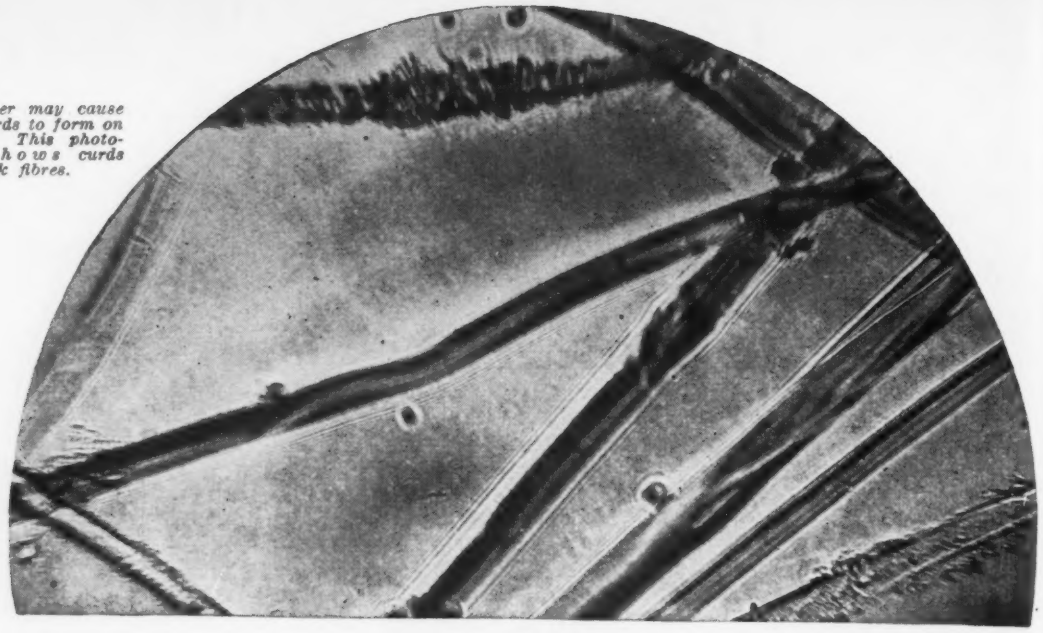
The spinners' situation is somewhat better. Underwear knitters were in the market this week, and though orders were confined to a few spun silk houses, the activity strengthened market tone. Sweater mills also have been placing fair-sized contracts for yarn. Spinners hope for better buying by wool goods weavers as soon as the cutter and retailer demand for the fall lines picks up.

◆Cables Favor Silk; Undertone Weak

IMPROVEMENT in yen position had a tonic reaction on the Japanese silk market which in turn strengthened New York sentiment this week, but consumer demand for silk was so weak that the outlook was little, if any, better. Importers complained of general stagnation among the manufacturing industries. Orders from broadsilk mills shrank to a few 10-bale contracts and hosiery mills, which had been a mainstay for some months, also withdrew from the market. Fabric sales have been so unsatisfactory that weavers are curtailing drastically and are buying raw silk only on a day-to-day basis.

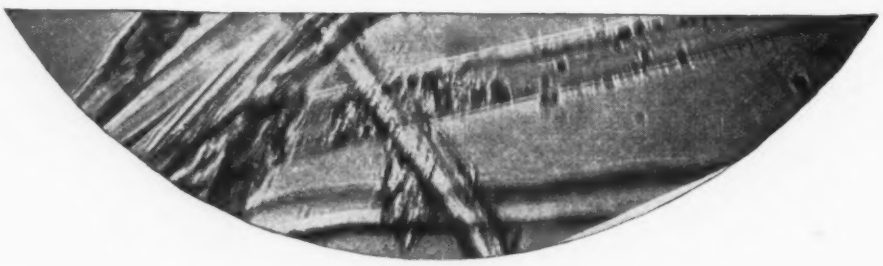
Weakening of mesh hosiery prices has served to make these knitters uncertain. Hosiery buyers on numerous instances, withdrew orders on hearing of the Asahi-Gerli purchase and distribution plan for the Japanese surplus; despite assurances to the contrary, there is considerable fear in the market that this stock may be disposed of to the disadvantage of supplies already on the market.

All imports for April were well below the previous month, and the total consumption is expected to be extremely low. It is symptomatic of the general condition that no one is making any inquiry about the new crop, now only a few weeks off. Importers are hopeful that Japan will curtail production.



Impure water may cause sticky soap curds to form on textile fibres. This photomicrograph shows curds clinging to silk fibres.

What happens during the *rinse?*



IN THE early stages of manufacture all textile fibres are cleansed—wool is scoured, silk is degummed and cotton is boiled off. In practically all cases the cleansing is done by a solution of soap, alkalies and water.

This seems like a fairly simple operation, but right at this point trouble can develop that doesn't show up until a later manufacturing process.

It is easy to see why this is so. Practically all natural water supplies contain hardness, and when soap or alkalies are added to the water sticky, insoluable curds are formed by chemical reaction. This formation of sticky curds continues during the rinsing operation as more hard water is brought in contact with the soapy yarn or fabric.

Later on these curds cause trouble—spotty, streaky and uneven dyeing, dull shades, harsh goods, etc. In spite of the greatest care best results cannot be obtained.

Look at the picture above showing the deposit of soap curds on silk fibres. This is an extreme case, but very probably a similar condition is causing you trouble and expense right now.

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◆Cottons Await Further Curtailment

PRESSURE of competition has further weakened prices of print cloths and narrow sheetings. Last week large commission houses met the second-hand price of 3½c. on 38½-inch 64x60s; this week the quoted price was 3¼c. with clear intimation that offers of worthwhile spot or nearby business would find acceptance at 3⅛c. That this may be only a temporary condition is indicated by the fact that mills will not take contracts for later delivery at such low figures. Likelihood of further curtailment during the next three months is foremost in the minds of sellers and the doctrine that it is better to shut down than take orders at a loss is gaining ground.

Probability now is that most gray goods mills will shut down for two weeks each in the months of May, June and July. This action will give them much less to sell and should make it possible that a further period of distress selling can be avoided. During this summer period it is undoubtedly true that stocks will diminish and that mills which have closed down will require reasonably attractive prices to encourage them to start up again. Distributors at the same time will not be faced with the usual superfluity of goods, and buyers who habitually remain inadequately covered may learn a lesson which will improve their attitude toward the market later on. Extended shutdowns will give time for more analytical consideration of the situation and perhaps permit the adoption of cost saving methods and machines by those who may not yet have gone as far as is possible along these lines.

Promotional cooperation for National Cotton Week from the retail trade has developed in most encouraging form. Many of the New York stores are already stressing cottons in their window displays and advertising, and propose to get the aid of Cotton Week for a good period before and after that national event. A certain amount of buying has been going on in preparation for Cotton Week, but so far because of the generally backward spring season and the reduction in consumer buying power, the volume has been insufficient to find reflection in the primary market.

Cotton will be laid before the consumer in a greater variety of forms than usual, ranging not only through household supplies to dresses, but going on to hand-bags, shoes and many other miscellaneous articles.

Towel makers are showing new lines and pushing old ones. One concern is stressing its colored borders, with interest in dobby borders a close second. Another is showing the consumer how a beach ensemble of cape, turban, bag and beach-pillow may easily be made up from towels and wash cloths in such a way that the sewing may later be removed and the towels put back into domestic service should that be desired.

The seasonal movement of outing flannel is said to have subsided after a little spurt, but specifications are coming in in better form.

Fine and fancy goods were relatively quiet with prices unsettled. In rayon combinations there has been little price change, but it is difficult to compare quality over the market as so many various constructions are being turned out.

▸Illegal Use of Durene Name Charged

Declaring there have been recent instances of illegal use of the Durene name on merchandise not made of Durene yarns, E. L. Starr, director-treasurer of the Durene Association of America, has issued a note of warning to leading department stores, specialty shops, buying groups, wholesalers, sales agents, Durene licensees, certain non-licensees, and educationalists throughout the country.

Mr. Starr's communication asserts that "with the increasing popularity of Durene, the association finds a situation which, though not unexpected, calls for special caution by everyone handling Durene merchandise. This situation is that certain manufacturers are trying to use the name Durene on merchandise not made of Durene yarns, and thus illegally are attempting to secure the benefit of the sales promotional work of the Durene Association."

▸Pacific Northwest as Textile Outlet

The importance of the Pacific Northwest as a market for textiles and other manufactured goods is recorded in a volume just issued by the United States Department of Commerce presenting the results of a commercial survey of the region. The report, "Commercial Survey of the Pacific Northwest," covers an area of more than 280,000 square miles comprising the states of Washington and Oregon, northern and southwestern Idaho and western Montana. The Pacific Northwest, the report shows, buys and sells in every market of the United States. Basic industries such as agriculture, livestock raising, lumbering, mining and fishing are among the principal sources of Pacific Northwest income. Agriculture, lumbering and manufacturing alone, according to the survey, are found to add more than $1,000,000,000 of potential buying power to the pockets of Pacific Northwest citizens annually.

◆Wool Mills May Close for Summer

MOVEMENT of wool goods lines, both spring and fall, is so extremely backward that numerous New York factors regard a summer shutdown of mills as practically inevitable. Others estimated that a maximum of 10% of the industry's looms would be operating in the June-August period. Present demand is very sporadic and it is difficult to see ahead. Occasional advance orders on fall staple suitings are being placed, but these are all small, mostly of the sample type. Fall business is less than the industry has ever known, at this time of the season; the one bright spot is the better price tone. Quotations on futures have held fairly steady for ten days, and the market is hoping this condition will continue.

Cutters and retailers continue to place spot orders and there is still a considerable quantity of lightweight fabrics available. In view of the upside-down season, there may be a good deal of spring business yet placed. Suitings houses are divided on the importance of fancies: a few companies report good call for novelties, but generally interest centers on the ultra-conservative designs.

◆April Snow Cuts Broadsilk Sales

THE increased demand for printed sheers which brought encouragement to weavers has suffered a set-back by the cold spell of ten days ago when snow fell in New York. The market therefore found itself startlingly quiet. The lull served to weaken prices of all lines, including even some of the leading summer prints. The lightweight chiffons, especially in pleasing large floral patterns, held their own, however, and a fairly steady turnover obtained, though all orders were abnormally small. Broadsilk mills are less confident of the outlook than they were; weather conditions of the next two weeks will be a determining factor, as the least spell of backward weather is sufficient to cause buyers to postpone activity.

Heavyweight sheers, which enjoyed a moderately good movement at the beginning of the month are now weakening, and some firms are trying to clear these goods at substantial reductions. These offerings include some of the popular tailored designs. While mills have unquestionably curtailed, demand is so sporadic that even existing stocks do not move evenly and sales managers of broadsilk houses complain of a superabundance of distress goods being available.

KNIT GOODS MARKETS

TEXTILE WORLD ANALYST

◆Swimsuit Shortage May Bring Premiums

DEMAND for bathing-suits in all lines registered an important pick-up during the last week, and while certain aspects remain a problem, there seems little question that the season has finally opened. It needs now only a spell of moderately good spring weather to maintain the present movement. Increased sales have been reported by most of the representative companies, and some firms are so short of stocks that they are trying to "farm out" their orders to other manufacturers.

The spurt has brought real cheer to sales executives but the keener minds of the industry, who look beyond the immediate situation are not so satisfied. The extreme delay in buying and the forced curtailment by mills, they point out, has reduced stocks to the point where the total volume may be a disappointment, despite congested movement next month. The issue, of course, is whether mills operating at capacity now can make sufficient stock for even a moderate total demand, which seems virtually impossible.

There are strong prospects of a tight price market; it is expected that within a couple of weeks buyers will be paying premiums for spot shipment. Other outerwear lines also are in good call. Men's lightweight sweaters, mostly the semi-staple lines moved steadily. Women's summer sweaters were not so active at the wool end, so far as woolens were concerned, but there was a good call for the all-silk garments; women's knitted suits were particularly favored in demand, especially the mesh styles.

◆Summer Underwear Fairly Active

APPROACH of summer has helped the turnover on lightweight underwear lines, though manufacturers still complain that backward weather conditions are delaying the season. Jobbers and retailers were in the market for fair-sized quantities of men's athletic shirts and shorts, and women's garments (both silk and rayon), and prices were moderately firm. Some companies noted a sharp increase in call for lightweight lines early last week, followed by a decline, equally sharp, which was attributed to the snowy weather in the Atlantic States. Some buyers took a fighting attitude on prices, insisting on concessions wherever obtainable. Manufacturers strongly resisted reductions in the case of spot business, but were willing to shade off, when future business was placed, which, incidentally was very seldom. The stock situation is decidedly favorable to the underwear mills, as there is well below the normal supply.

Manufacturers are encouraged by current prospects and look for six to eight weeks of fairly satisfactory business on lightweight lines. Women's lightweights styled in conformity with the mesh vogue are a strong feature of the market and continued good movement of this line is expected. Fall underwear lines are not so good, but the trade is becoming resigned to a very backward season, and production is being carefully watched. Continued improvement in lightweights will have a favorable effect on the winterweights.

◆Mesh Hosiery Future Uncertain

HESITANCY regarding the outlook for mesh full-fashioned hosiery becomes more noticeable among the manufacturers each week. This is a development which goes beyond the immediate up or down of volume, but which should be considered in any long-time schedule of mesh hosiery production. For one thing, prices of these novelties appear to have lost their characteristic firmness. The low-priced lines are decidedly uncertain, and even in the quality range, there is a slow but persistent downward trend. This situation is not general, and may not become so; numerous leading makers of quality mesh hosiery are sold ahead, despite the recent lull due to weather conditions, and these firms look to a good summer. However, the 100% confidence of two months ago exists no longer, and a certain amount of caution is advisable.

Women's plain full-fashioned hosiery sells steadily, but prices are very competitive; stocks do not appear to be excessive, the weakness being due largely to lack of firm policy among knitters. The extremely low-priced mesh seamless, notably the 50c. merchandise, was active this week and manufacturers claimed that the prices paid allowed a very pleasing margin. Children's anklets are less firm as to price, but there is still a fairly good demand. Mesh half-hose continues active with prices firm. The rayon sox have shown a downward slant in prices and much of the current buying is of the trade-dollars type.

▸Neuburger To Sell Van Raalte Underwear

A. S. Neuburger, mill agents, Grand Central Terminal Bldg., New York City, have assumed the sole selling agency for Van Raalte Co.'s "Niagara Maid" tricots and milanese fabrics, particularly for the underwear trade. Max Wohl, formerly of Elk Mills, is in charge of sales.

◆Raw Cotton Report

(Continued from page 45)

in the South, the disappointing action of the stock market, and continued nervousness over legislative uncertainties in Washington.

Meanwhile, the coming crop seems to have been making fair progress. During this week there has been some delay to germination and growth of young cotton to low night temperatures, but conditions otherwise have been more favorable and at the moment, at least, one must go beyond the prospective start of the crop to find any promise of an unfavorable outturn. At the same time all reports continue to indicate a sharp reduction in the use of fertilizers. According to the New York Cotton Exchange Service, fertilizer sales in the nine principal cotton growing States totaled 787,000 short tons during April against 1,050,000 for the same month last year, and since April 1, have amounted to 1,739,000 short tons compared with 2,980,000 to the same period last season.

Many traders think it almost impossible that another big yield of cotton per acre can be produced following the extraordinary large crop of last year, while reports on boll weevil emergence in Texas reinforce this view of the outlook. According to one of the local crop reporting bureaus, the recent decline in the market has led to some curtailment in planting intentions and reports now indicate a somewhat larger reduction in acreage than they did at the beginning of March. Figures on acreage reduction still range from about 7 to 16% with the average trader inclined to base his preliminary ideas on a reduction of about 10%.

◆Peeler Comber Firm Despite Cotton Prices

PEELER comber continues to be the outstanding feature of what is otherwise a dull cotton waste market. Despite the sag in raw cotton, prices on this stock have remained firm at 6 to 6¼c. per lb., due to limited supply and fair demand. Mill operations in combed yarns continue at a low level and there are no indications of larger supplies in the near future.

Other spinnable wastes have reflected to some extent the firmness in peeler comber, quotations on both peeler strips and Sak. strips being unchanged for the week at 5¼ to 5½ and 6½ to 7c. per lb. respectively. Choice willowed fly dropped ½c. per lb. to 2½ to 3c. on light trading. Demand for linters and single white spooler was stagnant.

TEXTILE FINANCIAL NEWS

TEXTILE WORLD ANALYST

◆ Insull Mills Show Operating Losses

THE cotton textile units of New England Industries, Inc., an Insull controlled company, showed operating losses for the year ended Dec. 26, 1931, compared with the preceding fiscal year, as follows:

The Androscoggin Mills, Lewiston, Me., showed operating loss of $226,002, compared with $208,577 in the year ended Dec. 27, 1930. The company showed a balance sheet deficit of $300,895, the increase of $163,901 being made up of credit due to the reversal of reserve for inventory fluctuation of $62,911 no longer required and the operating loss of $226,002 which, according to the report, was due largely to a markdown of raw materials (including cotton futures), and all inventories to a basis of cost or market, whichever was lower.

The Bates Mfg. Co., Lewiston, Me., showed an operating loss of $1,073,259, compared with $459,575 in the previous year. The company's surplus of $2,858,002, as of Dec. 26, last, showed a decrease of $896,322. This was made up of a credit due to reversal of reserve for inventory fluctuation of $176,937 no longer required and the operating loss of $1,073,259. Inventories of $1,145,514 were reduced to a basis of cost or market, whichever was lower, according to the financial report.

The Hill Mfg. Co., Lewiston, Me., showed an operating loss for the year of $590,001, which, according to the financial report, was due largely to a markdown of raw materials (including cotton futures) and all inventories to a basis of cost or market, whichever was lower. This compares with an operating loss in the previous year of $310,453. The company closed the year with a deficit of $342,074, or a decrease in last year's surplus of $463,489. This decrease was made up of a credit due to reversal of reserve for inventory fluctuation of $126,511 no longer required and the operating loss of $590,001, according to the statement.

The York Mfg. Co., Saco, Me., showed for the year ended Dec. 26, 1931, an operating loss of $317,179, compared with an operating loss of $131,211 in the preceding year. Raw materials (including cotton futures) and all inventories were marked down to a basis of cost or market, whichever was lower. The company's deficit increased during the year to $1,544,703.

The Edwards Mfg. Co., Augusta, Me., in the year ended Dec. 26, 1931, showed an operating loss of $360,176, which was due largely, according to the company, to a markdown of raw materials (including cotton futures) and all inventories to a basis of cost or market, whichever was lower. This compares with an operating profit, before inventory adjustment, of $59,912 reported in the year ended Dec. 27, 1930. The company's surplus decreased $134,959 to $934,782. The decrease, it is pointed out, was made up of a credit due to reversal of reserve for inventory fluctuation of $225,216 no longer required and the operating loss.

U. S. Testing Co.

The financial report of the United States Testing Co., for the year ended Dec. 31, 1931, shows current assets of $142,229.49 against current liabilities of $15,104.45. The assets comprise: cash on hand and in banks, $43,945.87; customers' accounts receivable, $80,871.99; and inventories, $17,411.63. Liabilities comprise: accounts payable $6,890.98; salaries, wages and expenses accrued $3,213.47 and reserve for taxes $5,000. Land, building, machinery and equipment are valued at $738,544.67, less $196,127.41 reserves for depreciation. Total liabilities are $289,026.88 which with capital stock and surplus of $401,437.29 bring total liabilities and capital to balance with total assets at $690,464.17.

Financial Brevities

Sidney Blumenthal & Co., Inc., and its subsidiaries, including Saltex Looms, Inc., reports a net loss for the first quarter ended March 31 of $375,775, after depreciation, etc. Net loss for the first quarter of 1931 was reported to be $59,083.

The Hanes Associated Mills, sales agents for the Hanes Hosiery Mills, Winston-Salem, N. C., and the Wilkes Hosiery Mills, Wilkesboro, N. C., report that sales for the first quarter of the year are larger, in dozens, than in any previous quarter in the history of both companies. Hanes' plants produce women's seamless hose and the Wilkes' plant half hose.

Esmond Mills has declared a regular quarterly dividend of $1.75 on the preferred stock, payable May 2 to stock of record April 26.

Favorite Knitting Mills Co., Cleveland, Ohio, has filed a voluntary petition in bankruptcy. Assets are stated at $65,046, and liabilities are reported to be $61,955.

Samoset Plush Co., Central Falls, R. I., has filed a voluntary petition in bankruptcy, showing assets of $70,899, and liabilities of $71,044.

Despite unfavorable conditions in the woven floor covering market during 1931, sales of the Mohawk Carpet Mills, Amsterdam, N. Y., showed an increase in yardage of more than 11% for that year, compared with 1930, according to a recent summary.

The Dover Mills Co., Shelby, N. C., recently declared a 6% dividend on its common stock and a 4% semi-annual dividend on its preferred stock, the total dividend payments amounting to $37,800.

▶ Southern Mill Stocks

(R. S. Dickson & Co., Charlotte, N. C.)

	Bid	Asked
Acme Spinning Co.	20	34
American Yarn & Processing Co.	..	21
Chadwick Hoskins Co. (Par $25)	4	8
Chadwick-Hoskins Co., 8% pfd.	58	65
Crescent Spinning Co.	17	30
Durham Hosiery, 6% pfd.	15	17
Erwin Cotton Mills Co., 6%, pfd.	88	94
Flint Mfg. Co.	..	45
Flint Mfg. Co., 7%, pfd.	..	68
Hanes, P. H. Knitting Co.	..	6
Hanes, P. H. Knitting Co., 7%, pfd.	70	80
Linford Mills	20	35
Perfection Spinning Co.	24	37
Roanoke Mills, 1st pfd., 7½%	25	34
Rosemary Mfg. Co., pfd., 7½%	55	..
Stowe Spinning Co.	..	31
Ware Shoals Mfg. Co.	..	80
Ware Shoals Mfg. Co., 7%, pfd.	76	85
Winget Yarn Mills Co.	..	40
Wicasset Mills Co.	105	120
(A. M. Law & Co., Spartanburg, S. C.)		
Avondale Mills, Ala.	..	550
Bibb Mfg. Co.	60	65
Clifton Mfg. Co.	48	53
D. E. Converse Co.	40	45
Dunean Mills	..	60
Dunean Mills, pfd.	..	85
Gossett Mills	..	25
Hunter Mfg. & Com. Co., pfd.	..	40
Judson Mills, A pfd.	..	70
Judson Mills, B pfd.	..	65
Monarch Mills	..	65
Newberry Cotton Mills	50	55
Orr Cotton Mills	..	25
Pacolet Mfg. Co.	..	20
Piedmont Mfg. Co.	50	56
Riverside & Dan River Mills (Par $25)	4	7
Riverside & Dan River Mills (6%, pfd.)	42	47
Southern Bleachery & Print Works, pfd.	..	40
Spartan Mills	..	80
Union-Buffalo Mills, 1st pfd.	20	25
Victor-Monaghan Co.	..	38

▶ New England Textile Stocks

	Sale	Bid	Asked
Am. Mfg. Co., pfd.	50	44	..
Amoskeag	2	2	2½
Arlington	10	10	13
Associated Textile	10	..	10
Bates	10	..	7
Berkshire Associates, com.	1½	1½	3
Berkshire Associates, pfd.	40½	10	12
Bigelow-Sanford, com.	9½	10½	12
Edwards	80½	..	25
Farr Alpaca	15	12	13
Hamilton Woolen	47½	50	55
Hill	7	2	5
Ludlow	48½	31	35
Merrimack, com.	3½	3	..
Nashua, com.	3½	3	5
Nashua, pfd.	29	15	18
Naumkeag	46	42	44
Newmarket	10	9	12
Otis	45	41	45
Pacific	6	5½	6
Pepperell	34½	25	35
Plymouth Cordage	49	37	40
West Point	35	24	26½
York	8½	4	..

▶ Textiles on N. Y. Exchanges

The following shows the movements of the leading textile stocks listed on the New York Stock Exchange and Curb for the week ended May 3:

	High	Low	Last Sale	Net Ch'g.
Adams Millis	21½	16½	16½	—4½
*American Thread, pfd.	2½	2½	2½	....
American Woolen	3	2½	2½	—½
American Woolen, pfd.	25½	21½	21½	—2½
Belding-Heminway	3½	3½	3½	—½
*Blumenthal	3	2	2	—1½
Botany Mills, A	½	½	½	....
Cannon Mills	16	15½	15½	—½
Collins & Aikman	5½	4½	4½	—1
Consolidated Textile	½	½	½	....
Durham Hosiery, pfd.	18	18	18	....
Gotham Hosiery	13½	11½	12½	+½
Industrial Rayon	27½	22	22	—5½
Kayser, Julius	6½	5½	5½	—½
Kendall, pfd.	32½	27	28½	—4½
Mallinson	½	½	½	—½
*Mock Judson	3	3	3	—1
Mohawk Carpet	7½	7	7½	—½
Pacific Mills	6	6	6	....
*Pepperell	27½	25½	25½	—2
Real Silk Hosiery	5	3½	4	—1½
*Tubize	2½	1½	1½	—1
United Piece Dye Works	7½	7½	7½	....

*Listed on Curb

▸ Amoskeag and Others Make Wage Cuts

Amoskeag Mfg. Co., Manchester, N. H., workers' convention held April 27, resulted in a vote to waive a two-thirds rule covering the wage scales to make it possible for operatives to accept the recently readjusted schedule announced by the company. The vote was 3,273 to 2,660 for acceptance of the schedule. The cut ranges from 10 to 25%, and was rejected by a 10 to 1 vote when first proposed. It is effective until Jan. 1, 1933. Company executives believe they can get business to maintain mill operation which otherwise would have been impossible.

Gonic Mfg. Co., Rochester, N. H., resumed operations May 2 with a 10% wage reduction in effect.

The Cocheco Mills, East Rochester, N. H., started operations again May 2, and announced a 10% reduction in wages effective at the same time.

E. Frank Lewis, Lawrence, Mass., has announced a 10% reduction in wages at local wool scouring mill, effective immediately.

New England Knitting Co., Winsted, Conn., reduced wages of employees 10%, effective May 1. Winsted Hosiery Co. made a like reduction on same date.

Blackinton Co., North Adams, Mass., has announced an impending adjustment of wages varying from 1 to 22%. Treasurer A. J. Buffum stated, however, that more looms will be put in operation soon.

▸ Boshamer & Co. Open Cotton Yarn Sales Offices

Boshamer & Co., have opened offices 1069 Drexel Bldg., Philadelphia, where they will engage in the sale of cotton carded, combed and novelty yarns, representing several well-known producers. They will also open New York offices June 1, in order to cover that section of the industry. This office will be in charge of H. M. Boshamer, who was for eleven years connected with the sales organization of the Gray-Separk mills. C. C. Boshamer, the other member of the firm, will be in charge of the Philadelphia office.

▸ F. E. Byrne, of Cannon Mills, Heads N. Y. Credit Group

The New York Chapter of the National Institute of Credit, meeting in New York, last week, elected Frank E. Byrne, of Cannon Mills, as president of the chapter succeeding Frank A. Liebel. Mr. Byrne had been first vice-president and chairman of the educational committee.

▸ Eavenson & Levering Issues New Price List

Eavenson & Levering Co., Camden, N. J., has issued a new price list on scouring and carbonizing effective May 2. The basic price is $1.85 per 100 lb. original weight for scouring grease wools. Free storage of finished stock will be granted for a period of four weeks following date of shrinkage report.

▸ Philadelphia School Booklet Stresses Quality in Textiles

A further move to direct attention to importance of quality in textile products and to opportunities afforded in the industry for trained experts, is shown in the booklet "Technical Education in Textiles," distributed by the Philadelphia Textile School. The publication has been prepared by Director E. W. France and his associates in the faculty of the school. It has been distributed to principals of leading high schools and a selected list of students graduating this spring. More than 800 copies have been sent out in response to direct inquiries.

Director France has been a strong advocate of the importance of trained men in the industry. With a sound knowledge of the fundamentals of "why and how," he has maintained that such men would be better fitted to meet the increasing complications of modern textile production and merchandising. He has also strongly upheld the importance of quality products as well as those having an appeal because of design, decoration and merit. The booklet is a reiteration of his faith in the future of the industry.

▸ Textiles, Inc., Located in New N. Y. Office

On the occasion of the removal of the New York offices of Textiles-Incorporated Sales Co. to more spacious quarters at 245 Fifth Avenue, A. G. Myers, J. H. Separk, and R. Grady Rankin, of Gastonia, spent several days in New York.

This company is spinning at its various plants high grade combed and mercerized yarns and spun rayon yarns; it also spins combed Sak and combed peeler reverse yarns for the thread converting trade.

The company executives state that neither their firm nor any officer of it has any connection with any thread converter in Gastonia or elsewhere and that their only contact with the thread industry is through the sale of natural yarn to the thread converters throughout the country.

▸ Japan's Trade Balance Unfavorable

Japan had an unfavorable trade balance in March amounting to about yen 64,500,000, according to a cablegram received in the Commerce Department Saturday from Commercial Attache H. A. Butts, Tokyo. Imports were valued at yen 166,500,000 and exports at yen 101,000,000. Raw silk exports were valued at yen 24,700,000 and cotton imports in March were valued at yen 72,200,000.

▸ Farm Board States Its Cotton Selling Policy

The Cotton Stabilization Corp. will be authorized by the Federal Farm Board to sell not to exceed 650,000 bales of its present holdings in the fiscal year beginning Aug. 1, 1932. This amount is approximately one-fifth of the total quantity of cotton now being withheld from sale by the Cotton Stabilization Corp. and by cotton cooperative associations. The corporation will make every effort to distribute sales throughout the season without disturbance to markets or to price levels.

This authorization by the Farm Board is in accord with recommendations by the Cotton Advisory Committee and also by the cotton cooperatives, leading southern bankers, and leaders in the textile trade. The cotton cooperatives hold 2,100,000 bales of the crop of 1930, under a commitment of the Farm Board extending to July 31, 1933, unless it can be sold at cost plus carrying charges, which would mean a price around 13c. The Cotton Stabilization Corp. holds about 1,300,000 bales under pledge to make no net sales before July 31, 1932.

▸ Can Handle Wool Crop, Marketing Corp. Announces

The National Wool Marketing Corp. announced in Boston this week that it is ready to handle the entire wool production of the country for 1932.

The corporation stated that "ample funds, warehousing facilities and experienced personnel for financing and efficient handling have been provided. Acceptances by the growers of offers which ignore entirely present tariff protection, will therefore, not be necessary."

The statement continued: "The wool remaining from 1931 will be marketed to orderly mill demand as in the past, having in mind the protection of values. The National looks forward to the future, confident in the belief that the wool industry, through cooperative efforts, will work its way out of present difficulties."

▸ Workers Plan Conference On Mill Closing

Plans for a conference between the employees and the officers of the American Woolen Co., regarding the projected closing of the firm's Washington mill, at Lawrence, Mass., were formed following a meeting of the 2,000 employees of the mill in Lawrence. The meeting voted to appoint a committee to confer with company officials relative to keeping the big textile plant open and also to petition the mayor and city government to reduce the taxes of the Washington, if the officials keep the plant operating. An announcement had been made previously that the Washington was to be closed temporarily.

After a talk by Mayor Wm. P. White the workers adopted a resolution expressing their willingness to arbitrate a wage cut, if the mill was kept open.

▸ Silk Converters Meet Tuesday in N. Y.

The entire converting industry comprising some 200 firms has been invited to attend a general meeting to be held Tuesday afternoon, May 10, at 5 o'clock, at the New York offices of the Silk Association of America, Inc. The purpose is to continue the organization of converters into a strong group which will be able to further effectively the interests of the industry. Louis Alpren, Alpren Bros., temporary chairman of the division, will preside. Paolino Gerli, president of the Silk Association, will be present. Among subjects to be considered are contracts, selling forms, market information.

▸ Statisticians to Gather Hosiery-Underwear Data

Definite steps toward the interchange of statistical information in the hosiery-underwear industry were taken this week, when the National Association of Hosiery and Underwear Manufacturers appointed a committee of expert statisticians, which will meet May 11 in New York, to make plans for collating statistics gathered from mills. The committee comprises: Stanley B. Hunt, Tubize Chatillon Corp., Virgil Jordan, McGraw-Hill Publishing Co., George Sommaripa, Silk Association of America, and Dr. George W. Taylor, of the Industrial Research Department of the University of Pennsylvania.

▸ Contract Placed For New Uniform Fabric

Cramerton (N. C.) Mills, Inc., under terms of contract recently awarded by the Government, will supply the United States Army with 1,223,125 yd. of a new type 39-inch khaki cotton uniform cloth. The price will be 31.95c. per yd. and the contract calls for completion of deliveries by January, 1933. The new uniform fabric is made of combed yarn.

▸ Boston Wool Receipts

Receipts of domestic and foreign wools at Boston, also imports at Philadelphia and New York for the week ended April 30, based upon data compiled by Dept of Agriculture, follow:

	Week Ended Apr. 23	Total to Date 1932	Total to Date 1931
Domestic	221,300	19,617,300	29,030,000
Foreign	None	10,914,000	19,995,000
Total	221,300	30,531,300	49,025,000
IMPORTS AT PRINCIPAL PORTS			
Boston	None	10,914,000	19,975,000
Philadelphia	111,521	8,286,521	12,420,000
New York	709,401	10,521,401	17,341,000
Total	820,922	29,721,922	49,736,000

▸ Donald Crawford to Represent W. J. Steel in New York

Warner J. Steel, Bristol, Pa., tops and worsted yarns on Bradford system, will hereafter be represented in the New York territory by the Donald Crawford Co., 45 East 17th St., New York.

Business News

Graham H. Anthony Becomes President of Veeder-Root, Inc.

Graham H. Anthony has recently been elected president of Veeder-Root, Inc., Hartford, Conn. He has served for some time as vice-president of the company. He is a native of Shelby, N. C., and a graduate of North Carolina State College. The company makes counters, particularly pick counters for the textile industry.

B & W Tube Company Opens Detroit Office

The Babcock & Wilcox Tube Co., Beaver Falls, Pa., announces the opening of a new branch office, in the Ford Building, Detroit, Mich. J. E. Polhemus has been appointed district sales manager, in charge of the Detroit territory. Mr. Polhemus was formerly assistant vice-president and district sales manager of the Detroit sales branch of the Associated Alloy Steel Co., of Cleveland, Ohio.

G. E. Sets Up Air Conditioning Department

The organization of an air conditioning department within the General Electric Co., which will market various electrical devices for home heating, humidifying and temperature control, has been announced by President Gerard Swope. One of the first products to be marketed by this new department will be a complete oil burning furnace. J. J. Donovan, of Cleveland, formerly in charge of apartment house refrigeration sales, will be manager.

McLeod to Sell Mossberg Dropwires, Beamheads, etc. in South

The Mossberg Pressed Steel Corp., Attleboro, Mass., is pleased to announce that they have made arrangements with the McLeod Cos. to handle the exclusive sale of their dropwires, beamheads and other miscellaneous textile mill supplies in the South. With this arrangement a more complete and better service can be given to customers in the southern States.

The McLeod Cos. consist of the following: Odell Mill Supply Co., Greensboro, N. C.; Greenville (S. C.) Textile Supply Co.; Atlanta (Ga.) Textile Supply Co.; Browning-Roberts Belting Co., Knoxville, Tenn.

Swann Chemical Enlarges Sales Organization

Following a comprehensive survey, new sales offices are being opened in five industrial centers and sales representatives are being placed in ten other cities by The Swann Corp., manufacturer of chemicals, according to Theodore Swann, president.

"We are convinced that this is a favorable time to expand our business," said Mr. Swann. "In consequence, we are increasing our sales forces by more than 50%, and, in addition to our present offices in Birmingham, St. Louis, Cincinnati and New York, we are opening new offices in Boston, Baltimore, Pittsburgh, Charlotte and Dallas. We are placing sales representatives in Albany, Harrisburg, Camden, Cleveland, Louisville, Knoxville, Memphis, Atlanta, Jacksonville and New Orleans. The Baltimore and Charlotte offices are being opened immediately and all the other arrangements will be completed before the end of May."

New Kieley & Mueller Plant at Newark, N. J.

The new plant at Newark, N. J., recently purchased by Kieley & Mueller, Inc., manufacturers of steam, water, air, oil and gas specialties, covers a ground area of 135 x 185 ft., providing 25,000 ft. of floor space. Additional acreage has been secured adjoining the plant for expansion purposes to meet future requirements.

In selecting the location for their new plant, the officials of the company chose the site at 40 Paris St., because of its ready accessibility to all points in the metropolitan district.

Kieley & Mueller, Inc., have been located for 53 years at 34-38 West 13th St., New York. For the present they will maintain an office at that address, while all manufacturing will be done in the new plant. Joseph O'Connor is president of the firm.

Sholes, Inc., Takes Over "Orange-Hart" Bearings

Commencing on April 30, the shops and general offices of Sholes, Inc., are located at Orange, N. J. New York office will be at 50 Church Street. The firm has taken over the manufacture of "Orange-Hart" bearings, and will continue all of these precision types as well as sleeves, taper pins, etc., in addition to its constructions and machinings of corrosion and heat resistant metals as formerly made.

L. R. Boyer Joins Toledo Scale

The Toledo (Ohio) Scale Co. announces the appointment of L. R. Boyer to the home office sales staff. Mr. Boyer will specialize in the sales of industrial type scales, including large capacity floor scales, auto truck scales, hopper scales and monorail scales. Mr. Boyer has had 15 years' experience in the weighing industry.

Full-Fashioned Tension Patented

The Grip-Rite tension device for full-fashioned footers, distributed by the Fidelity Machine Co., Philadelphia, Pa., is the subject of U. S. patent No. 1,835,654 recently issued to C. T. LaMont, Milwaukee, Wis. The attachment is said to be particularly applicable to mesh work.

G. P. Blackiston Joins Kron Co.

The Kron Co., Bridgeport, Conn., industrial scales, has appointed G. P. Blackiston as sales promotion manager. Mr. Blackiston formerly held the same position with the Wright Mfg. Co.

Chlorine Institute Moves

The Chlorine Institute has moved from 30 East 42d St. to 50 East 41st St., New York City.

QUOTATIONS

at close of business, May 4, 1932
Prices cover average qualities unless otherwise stated

Cotton Goods

	May 4	Apr. 27	May 6 1931
PRINT CLOTHS			
27 -in., 64x60, 7.60	2½c.	2½-2¾c.	3½
38½-in., 64x60, 5.35	3½c.	3½c.	4⅞-5 c.
39 -in., 68x72, 4.75	3½c.	4 -4¼c.	5½c.
39 -in., 72x76, 4.25	4¼c.	4¼c.	6¼c.
39 -in., 80x80, 4.00	4¼c.	5 c.	6¼c.
BROWN SHEETINGS			
36-in., 56x60, 4.00	4 -4¼c.	4 -4¼c.	5½-5¾c.
36-in., 48x48, 3.00	4¼c.	4¼c.	6 c.
37-in., 48x48, 4.00	3¾-3¾c.	3¾-4 c.	5 c.
PAJAMA CHECKS			
6½-in., 72x80, 4.70	4¼c.	4¼-4¾c.	6c
6 -in., 64x60, 5.75	4 c.	4 c	5c
MISCELLANEOUS			
Drills, 37-in., 3 yd..	4¼c	4¼-5 c.	6¼c.
Denims, 2.20	9¼c.	9¼c.	12 c.
Tickings, 8 oz.	11 c.	11 c.	15½c.
Standard prints	6¼c.	6¼c.	7¼c.
Eastern staple ginghams, 27-in.	6 c.	6 c.	8 c.

Cotton Waste

Peeler comber	6 - 6¼
Peeler strips	5¼ - 5½
Sak. comber	5 - 5¼
Choice willowed fly	2¾ - 3
Choice willowed picker	2 - 2¼
Sak strips	6¼ - 7
Linters (mill run	1¾ - 2¼
White spooler (single)	3¾ - 4¼

Cotton Yarn

CARDED (Average Quality)
Double Carded 2c.—4c., higher according to quality

SINGLE SKEINS OR TUBES (Warp Twist)

4s to 8s	$0.12	22s	$0.15
10s	- .12½	24s	- .15½
12s	- .13	26s	- .16½
16s	- .13½	30s	- .18
20s	- .14	40s ex. qual	- .25

TWO-PLY SKEINS AND TUBES

8s-2	$0.12- .12½	26s-2	$0.17
10s-2	- .13	30s-2	18- .18½
12s-2	13- .13½	36s-2	- .23
14s-2	- .13½	40s-2	- .24
16s-2	- .14	49s-hi.brk	- .26
20s-2	14 - .14½	50s-2	- .31
24s-2	- .16	6ps-2	- .33

SINGLE WARPS

10s	$0.12½	24s	$0.16
12s	- .12½	26s	- .17
14s	- .13	30s	- .18½
16s	- .13½	40s ex. qual	- .25
20s	14- .14½		

TWO-PLY WARPS

8s-2	$0.12½	24s-2	$0.16 - .16½
10s-2	- .13	26s-2	17 - .17½
12s-2	- .13	30s-2	18 - .18½
14s-2	- .14	49s-2 ordin.	- .24
16s-2	13½- .14	50s-2	- .31
20s-2	14 - .15	60s-2	- .33

8s-3 and 4-ply skeins and tubes; tinged, 11; white, 12; waste, 10½

HOSIERY CONES (Frame Spun)

8s	$0.12- .12	22s	$0.15½
10s	12- .12½	24s	- .16
12s	- .13	26s	- .17
14s	- .13½	30s tying	17½- .18
16s	- .14	30s reg	19 - .19½
18s	14½- .14½	30s ex. qual.	20 - .20½
20s	14½- .15	40s	- .25

COMBED PEELER (Average Quality)

TWO-PLY—(Knitting Twist) Cones

20s-2	$0.25	60s-2	$0.39 - .40
30s-2	.27 - .28	70s-2	.50 - .52
36s-2	.29 - .30	80s-2	.60 - .63
40s-2	.30 - .31	90s-2	.85 - .87
50s-2	.33 - .35	100s-2	.98 -1.05

WARPS, SKEINS AND CONES
TWO-PLY—(Warp Twist)

20s-2	$0.25	60s-2	$0.40 -0.41
30s-2	.28 - .29	70s-2	.50 - .52
36s-2	.30 - .31	80s-2	.60 - .62
40s-2	.31 - .32	90s-2	.85 - .90
50s-2	.35 - .36	100s-2	.95 -1.02

SINGLES

12s	$0.18½-0.19½	30s	$0.26 -0.27
14s	19 - .20	38s	.28 - .29
16s	.19½ - .20½	40s	.30 - .31
18s	.20 - .21	50s	.33 - .34
20s	.21 - .22	60s	.39 - .40
24s	.23 - .24	70s	.50 - .51
28s	.25 - .26	80s	.60 - .61

MERCERIZED CONES—(Combed, Ungassed)

26s-2	$0.42 -0.44	90s-2	$0.95
30s-2	.43 - .45	100s-2	1.20-1.25
36s-2	.45	120s-2	1.55-1.60
40s-2	.47	30s	.49- .51
45s-2	.48	40s	.54- .56
50s-2	.50 - .52	50s	.60- .62
60s-2	.55 - .57	60s	.65- .68
70s-2	.69	70s	.77- .80
80s-2	.79	80s	.92- .96

Cotton Prices and Statistics

COTTON STATISTICAL DATA

(Fluctuations of Futures)

	Closed April 28	For Week High	For Week Low	Closed May 4	Net Ch'ge
May	5.97	6.08	5.32	5.54	—0.43
June	6.04	6.04	5.55	5.57	—0.47
July	6.13	6.25	5.46	5.64	—0.49
August	6.20	6.20	5.71	5.72	—0.48
September	6.28	6.28	5.78	5.80	—0.48
October	6.36	6.48	5.68	5.88	—0.48
November	6.44	6.44	5.06	5.94	—0.50
December	6.52	6.64	5.83	6.02	—0.50
January	6.60	6.72	5.92	6.10	—0.50
February	6.67	6.67	6.15	6.17	—0.50
March	6.75	6.85	6.06	6.27	—0.48

SPOT FLUCTUATIONS FOR WEEK
(Middling)

	New York	New Orleans	Liverpool
Thursday, April 28	6.15	6.10	4.90
Friday, April 29	5.85	5.94	4.82
Saturday, April 30	5.60	5.59	4.66
Monday, May 2	5.70	5.67	4.57
Tuesday, May 3	5.75	5.72	4.61
Wednesday, May 4	5.65	5.83	4.57

FOREIGN COTTONS

Egyptian Cotton

Alexandria Exchange, May 3.		Change
May, Sak	10.86	—0.92
June Uppers	9.52	—0.53
May-June Shipment c. i. f. Boston (Tariff not included)		
Fully good fair Sak (No. 38)		11.75
Fully good fair to good Uppers (No. 10)		10.00

(By Anderson, Clayton & Co.)

Foreign cottons F. O. B. New York, Cents	
Peruvian Tanguis Strict Middling	16
Peruvian Pima No. 1	15½
Peruvian Moderate Rough	10
Peruvian Full Rough	16
China Tientsin No. 1	8½
India Rough	7 to10
India Smooth	6½ to 7½

(By Bruns-Nordeman Co.)

MOVEMENT INTO SIGHT

	This Year	Last Year
Week	97,000	76,000
Season	*13,984,000	12,479,000

*8,000 added.

WORLD VISIBLE SUPPLY

	Apr. 29	One Year Ago
Interior towns and ports of U.S.*	5,788,000	4,579,000
Afloat to and at ports of Europe	1,357,000	1,733,000
Afloat to and at ports of Orient	1,071,000	506,000
Total	8,216,000	6,818,000
	Decrease	Decrease
Change during week	211,000	112,000

*Includes afloat to New York.

FORWARDINGS TO MILLS OF WORLD

	This Year Week	This Year Season	Last Year Week	Last Year Season
No.States,U.S.	10,000	671,000	26,000	747,000
So.States, U.S.	57,000	3,700,000	53,000	3,256,000
Total U.S.	67,000	4,371,000	79,000	4,003,000
Great Britain	33,000	1,043,000	19,000	704,000
Continent	99,000	2,835,000	69,000	2,765,000
Orient	106,000	2,534,000	15,000	1,036,000
Canada and other America	3,000	152,000	6,000	184,000
Total foreign countries	241,000	6,564,000	109,000	4,689,000
World total	308,000	10,935,000	188,000	8,692,000

EXPORTS FROM UNITED STATES

Total	98,000	7,361,000	77,000	5,954,000

AVERAGE PRICE MAY-JUNE, SHIPMENT HARD WESTERN COTTON

F.o.b. New England

	Middling	St. Middling
1 1/16-in	7½-7¾c.	8 -8¼c.
1⅛-in	8 -8¼c.	8¼-8½c.
1 3/16-in	9¼-9¼c.	9¼-10c
1¼-in	11 -12c.	12 -13c.

Based on New York, July, 5.74.

SPOT FLUCTUATIONS AND STOCKS

Markets	April 27	May 4	Sales	This Week	Last Year
Galveston	6.20	5.65	3,229	669,137	555,154
New Orleans	6.14	5.83	6,356	1,065,313	728,813
Mobile	5.90	5.35	409	178,050	250,518
Savannah	6.19	5.59	2,553	246,342	360,015
Norfolk	6.15	5.65	2,253	54,298	80,579
New York	6.25	5.65	4,975	204,749	226,908
Augusta	6.25	5.63	2,376	112,953	81,348
Memphis	5.55	5.05	4,861	364,730	214,808
St. Louis	5.50	5.10			5,982
Houston	6.20	5.60	10,775	1,313,551	990,232
Dallas	5.80	5.15	4,827	20,268	8,578

DIFFERENCES ON AND OFF MIDDLING

WHITE GRADES

	Dallas	Memphis	Montgomery	Augusta	Average
M.F	0.50†	.75†	0.65†	0.63†	0.64†
S.G.M	.40†	.50†	.55†	.56†	.51†
G.M	.30†	.40†	.40†	.38†	.37†
S.M	.20†	.20†	.25†	.19†	.22†
S.L.M	.20*	.20*	.25*	.19*	.22*
L.M	.40*	.50*	.50*	.50*	.48*
S.G.O.**	.75*	.75*	.85*	.88*	.81*
G.O	1.00*	1.00*	1.15*	1.25*	1.11*

YELLOW TINGED

G.M	0.25*	0.25*	0.25*	0.25*	0.26*
S.M	.35*	.40*	.35*	.50*	.39*
M.**	.50*	.50*	.50*	.63*	.52*
S.L.M	.90*	.90*	.85*	.88*	.88*
L.M	1.25*	1.25*	1.15*	1.25*	1.24*

YELLOW STAINED

G.M	0.50*	0.55*	0.50*	0.50*	0.50*
S.M.**	.90*	.90*	.85*	.88*	.87*
M.**	1.25*	1.15*	1.15*	1.25*	1.22*

BLUE STAINED

G.M.**	0.65*	0.60*	0.50*	0.63*	0.58*
S.M.**	1.00*	.80*	.85*	1.00*	.91*
M.**	1.25*	.90*	1.15*	1.25*	1.18*

**Grades not deliverable on contract.
*Off Middling. †On Middling.

Wool

OHIO, PENNSYLVANIA AND WEST VIRGINIA
(IN GREASE)

Fine delne	$0.19½–$0.20	¼ blood	$0.18½–0.19
Fine clthg	.15 – .16	⅜ blood	.17½– .18
½ blood	.19½– .20		

TEXAS AND CALIFORNIA
(CLEAN BASIS)

Texas, 12 months	$0.45 –0.47
California, Northern	.39 – .41

PULLED—EASTERN (CLEAN BASIS)

AA	$0.48 –$0.50	B-Super	$0.41 –0.43
A-Super	.45 – .47	C-Super	.35 – .38

MONTANA, IDAHO AND WYOMING
(CLEAN BASIS)

Staple fine	$0.46 –0.48
Staple ½ bld	.45 – .47
Fine and fine medium	.44 – .46
¼ blood	.40 – .42
⅜ blood	.35 – .37

MOHAIR—DOMESTIC

Best carding	.18 – .20
Best combing	.23 – .25

MOHAIR FOREIGN (IN BOND)

Turkey fair, average	$0.17 –0.21
Cape firsts	.18 – .21

FOREIGN CLOTHING AND COMBING
(CLEAN BASIS IN BOND)

Australia:	
70s	$0.36 –0.37
64s	.28 – .30
58s-60s	.25 – .27

(IN GREASE)

Montevideo:	
58s-60s	$0.16 –0.17
56s	.15 – .16
50s	.14 – .15
Buenos Aires:	
4s, 40-44s	$0.10 –0.11
5s, 36-40s	.09 – .10

FOREIGN CARPET (GREASE BASIS IN BOND)

Aleppo washed	$0.13 –0.14
China: Combing No. 1	.10 – .11
China Filling Fleece	.09 – .10
Szechuen ass't	.10 – .11
Cordova	.08 – .09
Scotch black face (nominal)	nominal
East India: Kandahar	.13 – .14
Vican'r	.15 – .16
Joria	.15 – .16

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 36s	$0.70– .72½
2-24s 40s	– .80
2-26s 44s	80 – .82½
2-28s 46s	.85 – .87½
2-30s 48s	.90 – .92½
2-32s 50s	.92½– .95
2-30s 64s fancy mixes	1.17½–1.20
(Single yarns 5c. less than above)	
2-36s 58s	1.00 –1.02½
2-40s, 60s	1.12½–1.17½
2-40s, 64s	1.15 –1.20
2-50s, 66s	1.30 –1.35
2-60s, 70s	1.65 –1.70

ENGLISH SYSTEM KNITTING

2-20s, 44s in oil	$0.65
2-20s, 48s in oil	.67½– .70
2-20s, 50s in oil	.70 – .72½
2-20s, 56s in oil	.82½– .85
2-20s, 60s in oil	.95 – .97½
2-20s, 64s in oil	1.10 –1.12½
1-18s, 48s dyed	.85 – .87½
1–18s, 50s dyed	.87½– .90
(Oil yarns 17½c. less)	

FRENCH SYSTEM

1-20s, 58s	.90 – .95
1-20s, 60s	1.02½–1.05
1-18s, 64s, dyed	1.25 –1.27½
1-26s, 64s	1.02½–1.05
1-30s, 64s, Warp	1.10 –1.12½
2-30s, 64s, Fancy mixes	1.22½–1.25
2-40s, 64s, Zephyrs	1.22½–1.25
1-50s, 66s	1.35 –1.37½
2-50s, 66s	1.45 –1.47½
2-60s, 70s domestic	1.80 –1.85
1-60s, 70s, Australian	1.60 –1.70
2-60s, 70s, Australian	1.77½–1.87½

FRENCH SPUN MERINO WHITE

1-30s, 50-50-58s on cops	.90 – .92½
1-40s, 50-50-60s on cops	1.00 –1.02½
1-40s, 50-50-64s on cops	1.02½–1.05
1-40s, 50-50-64s Australian cops	1.10 –1.15

Underwear mixes, 3 to 5c., Solid color, 35c. additional.

New York Top Futures

	Closed Apr. 27	For Week High	For Week Low	Closed May 3	Net Ch'ge
May	56.00	57.00	55.50	55.50	—0.50
June	57.00	57.00	56.00	56.00	—1.00
July	57.00	57.00	56.00	56.00	—1.00
August	57.00	57.00	56.00	56.00	—1.00
September	57.00	57.00	56.50	56.50	—0.50
October	57.50	58.00	56.50	56.50	—1.00
November	57.50	58.00	56.50	56.50	—1.00
December	59.00	59.00	57.00	57.00	—2.00
January	58.00	58.50	57.50	57.50	—0.50
February	58.00	58.00	57.50	57.50	—0.50
March	58.00	58.00	57.50	57.50	—0.50

Tops and Noils

TOPS —BOSTON
(Nominal)

Fine (64-66s)	$0.68 –0.70
Half-blood (60-62s)	.65 – .67
High ¾ blood (58s)	.57 – .59
Aver. ¾ blood (56s)	.55 – .56
Low ¾ blood	.51 – .53
High ½ blood (50s)	.48 – .50
46s S. A. and N. Z	.50 – .51
44s S. A. and N. Z	.46 – .48
40s S. A. and N. Z	.43 – .45

TOPS — BRADFORD, ENG. (April 29)

Fine (70s)	23½d	¾ bld. (56s)	16½d
Fine (64s)	22 d	½ bld. (50s)	12 d
½ bld. (60s)	21½d	Cross-bred (46s)	9 d

NOILS — BOSTON

Fine	$0.36 –$0.38	High ½ bld.	$0.26 –$0.28
Half-bld	.31 – .33	Low noils	.20 – .23
Aver. ¾ bld.	.28 – .30	Medium colored	.18 – .20
Fine colored	.23 – .28		

Wool Substitutes

WOOL WASTE

Lap, fine white	$0.56 – .58
Lap, fine colored	.40 – .43
Hard ends, fine white	.40 – .42
Hard ends, ½ blood white	.27 – .30
Hard ends, fine colred	.18 – .20
Hard ends, medium colored	.13 – .15
Card, fine white	.23 – .25
Burr, fine carbonized	.24 – .26

OLD WOOLEN RAGS (GRADED FOR MFRS.)

Merinos, coarse light	$0.04½–0.05
Merinos, fine dark	.02½– .03
Merinos, fine light	.08½– .09
Serges, blue	.03½– .04
Serges, black	.03½– .04
Serges, red	.06 – .07
Knit, white	.20 – .21
Knit, red	.07½– .08½
Knit, light hoods	.08½– .09½
Worsted, light	.03½– .04
Worsted, blue	.04 – .05
Worsted, black	.04 – .05

Silk Yarns

THROWN SILK (60 day basis)
Prices Nominal

Japan organzine, 2 thd. spec. gd. XX sk. 85%..	$2.55
Japan organzine, 2 thd. grand sk. 83%	2.45
Japan organzine, 2 thd. sp. crack. sk. 81%	2.35
Japan crepe, 3 thd. gd. XX bob. 83%	2.25
Japan crepe, 3 thd. sp. crack. bob. 81%	2.10
Canton crepe, 3 and 4 thd. 14/16 on bobbins	1.75
Hosiery tram, 3 thd. Japan 90%	3 20
Hosiery tram 5 thd, Japan, 85%	2.30
Hosiery tram, crack XX 78%	2.15

SPUN SILK YARNS (Terms: net 30)

40/2	$3.10	60/2	$3.35
54/2	3.30	62/1	2.35

Raw Silk

(60 Day Terms. Spot Goods)
Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Super Grand, 87%	$1.80	$1.55	$1.60
Special Grand, 85%	1.70	1.45	1.50
Grand XX, 83%	1.60	1.40	1.45
Special Crack, 81%	1.50	1.35	1.40
Crack XX, 78%	1.45	1.30	1.35
Extra Extra, 73%	1.40	....	....
Best Extra, 68%	1.30	....	....

Canton filature, new style, 14/16	$1.20
Canton filature, new style, 20/22	1.10
Tussah filature, 8 cocoon	.70

NATIONAL RAW SILK EXCHANGE

	Close Apr. 20	For the Week High	For the Week Low	Close Apr. 26	Net Ch'ge
May	1.34	1.35	1.33	1.35	+0.01
June	1.38	1.39	1.38	1.38	.....
July	1.38	1.40	1.35	1.38	.....
August	1.39	1.41	1.39	1.41	+0.02
September	1.38	1.41	1.36	1.40	+0.02
October	1.38	1.41	1.38	1.41	+0.03
November	1.39	1.41	1.39	1.41	+0.02
December	1.39	1.41	1.38	1.41	+0.02

Total number of bales, 1,110. Total approximate value, $214,063.50. Trading unit crack XX 13/15 white 78%.

Domestic Rayon

VISCOSE PROCESS

Denier	Filament	First Qual.	Second Qual.
30	8	$2.25	....
50	12–18	1.35	$1.25
75	18–30	1.20	1.10
100	18–40	1.00	.90
125	36–50	.90	.80
150	30	.72	.70
150	24–44	.75	.72
150	60	.85	.82
150	75–90	.85	.82
170	24–27	.75	.72
170	60	.85	.82
200	30–42	.75	.72
300	42–62	.63	.60
450	42–72	.63	.60
500	72–96	.63	.60
900	100–144	.63	.60

NITRO-CELLULOSE PROCESS

Denier	First Qual.	Second Qual.	Denier	First Qual.	Second Qual.
75	$1.35	$1.25	150	$0.75	$0.72
100	1.05	.95	175	.75	.72
125	.95	.85			

CUPRAMMONIUM PROCESS

Denier	Filament	Price	Denier	Filament	Price
15	24	$3.10	75	60	$1.30
25	24	2.85	80	60	1.30
30	24	2.60	100	75	1.10
40	30	1.70	120	90	1.00
52	30	1.50	150	112	.90
65	45	1.40	180	135	.87

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.60	125	$1.10
60	1.50	150	1.00
75	1.40	300	1.00
100	1.30		

Rayon Waste

Open bleached waste	$0.13–$0.14
Open bleached waste	.10½
Bleached thread waste (mfs.)	.09
Bleached thread waste (misc.)	.06– .07
Colored thread waste	.03– .04
Colored clips	.03– .04

CONVERTED RAYON WASTE

Bleached tops	$0.30–$0.32½
Unbleached tops	.27– .28
Bleached noils	.11
Unbleached noils	.09½
Bleached garnetts	.12
Unbleached garnetts	.13
Colored garnetts	.10– .11

Silk Waste

Kibizso Kakai Grand XX	0.50
Kibizso Kakai Triple Extra	.44
Frison Grand Double	.49
Pierced Cocoons	.50

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